THE EFFECTS OF A PARENT TRAINING PROGRAM THAT IS RESPONSIVE TO CURRENT REPERTOIRE AND AFFECT

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Social deficits are one of the defining symptoms of autism spectrum disorder and affect a child's ability to build relationships with others. These deficits put children with autism at a disadvantage when most of their world is focused on building connections with others – family, friendships, and community ties. Sunny Starts, a service-learning project, was created to specifically meet the needs of families with young toddlers with autism. The primary focus of Sunny Starts is to enhance the quality of the parent-child relationship by teaching parents a basic teaching interaction and to arrange the child's environment in ways that are mutually reinforcing. The purpose of this experiment is to study the effects of the Sunny Starts DANCE training package, a responsive parent training program, on three levels of parent and child behaviors: 1) teaching episodes, 2) turn taking, social attending, vocal requests, and 3) synchronous engagement. Participants included two parent-child dyads. Parent training included 5-minute video assessments, video review, descriptions, rationales, modeling, practice, and feedback. The effects of the parent training were evaluated using a concurrent multiple baseline across participants. Results indicate parent teaching episodes and child behaviors (turn taking, social attending, and verbal requests) increased during the intervention phase. The duration of parent-child synchronous engagement maintained at high levels and slightly increased.

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INTRODUCTION

Social deficits are one of the defining symptoms of autism spectrum disorder and affect a child's ability to build relationships with others. These deficits put children with autism at a disadvantage when most of their world is focused on building connections with others – family, friendships, and community ties.

Research on typical development indicates an important relationship between a caregiver's responsiveness and their children's level of social-communication development (Mahoney & Perales, 2003; Siller & Sigman, 2002). For example, in a longitudinal study of typically developing toddlers and their parents, Hart and Risley (1999) observed frequent interactions in which both the child and parent led and followed, enticed and prolonged, and functioned as speakers and listeners. In other words, there were mutual give-and-take interactions. Hart and Risley's findings suggest that greater gains in language development were correlated with increased interactions. Similarly, Siller and Sigman (2002) conducted a longitudinal study on parent-child synchronization during the play activities of children with autism. In this study, synchronization meant that caregivers were focused (i.e., attending to, communicating, and participating) on their child during play. The results suggested that children whose parents displayed high levels of synchronization during play interactions developed improved short-term outcomes (better joint-attention) and long-term child outcomes (better language skills) in comparison with families with lower levels of parent-child synchronization. Furthermore, in a meta-review of parent interaction research, Trivette (2003) concluded that parent's sensitivity and responsivity to child cues has a positive influence on the cognitive and social-emotional development of children over time.

Dawson and colleagues (2004) suggest the typical parent-child experience is inherently rewarding and motivates prolonged social interactions. From a behavioral perspective, this can be conceptualized as responses between the parent and child that have reinforcing value for one another, that is, the interaction is mutually reinforcing. For example, when a child initiates to the parent and directs their attention, as when children show parents an interesting toy, the experiences shared are likely to have mutually reinforcing properties. The parent may like the child's attention and find the child's interests, for example, "cute," "amusing," or "endearing." The child may like the parent's approval, laughter, help, etc. In any case, they both desire enjoyment from the interaction. Hart and Risley (1999) characterize these typical parent-child interactions as "graceful social dances" that occur simply for the shared enjoyment. These positive interactions are inferred by the affect of both the parent and the child, the prolonged engagement, and the absence of coercive contingencies.

For children with autism, who have profound social communication deficits, this social dance can be a challenge. Children with autism do not respond to their social environment in the same ways typically developing peers do. They have difficulties communicating to others and often show a much lower interest in people and objects (Adamson, Deckner, & Bakeman, 2010). Additionally, research comparing the differences in social behaviors of children with autism, children with developmental delays, and typically developing children shows children with autism have greater deficits in social attending, joint attention, and attention to others' distress (Dawson et al., 2004).

The number of children diagnosed with autism increases each year, in part, due to the advancements in technology to detect markers associated with autism at earlier ages. Children

are now being diagnosed as early as 12-18 months of age (Robins, Fein, & Barton, 2009) using reliable screening protocols (e.g., Robins, Fein, Barton, & Green, 2001), the American Academy of Pediatrics' call for universal toddler screening for ASD (Johnson & Myers, 2007), and the adaptation of the Autism Diagnostic Observational Schedule for toddlers (Luyster et al., 2008). In fact, indicators of autism are being described as early as 8 - 10 months (Werner, Dawson, Osterling, & Dinno, 2000) and several assessments have been developed to measure autism risk behaviors in infants (Bryson et al., 2007) including the Autism Observation Scale for Infants (Zwaigenbaum et al., 2005) and the First Year Inventory (Watson et al., 2007). Earlier detection of some of these at-risk behaviors has resulted in earlier diagnosis. Earlier diagnosis presents opportunities to intervene and produce generative changes during the first few years of life. The literature clearly points to the critical role parents play as change agents across the life span.

Parents of children newly diagnosed with autism often face a growing number of concerns and stressors associated with their child's disorder. Several studies have suggested that parents of children with autism experience more stress than parents of children with other developmental disabilities (e.g., Baker et al., 2003; Bristol, Gallagher, & Schopler, 1988; Dumas et al., 1991; Sanders & Morgan, 1997). Furthermore, stress experienced by parents of children with autism seem to be greater during the early childhood and preschool ages as compared to older ages (Schieve, Blumberg, Rice, Visser, & Boyle, 2007). Several studies suggest that higher frequency and intensity of behavior problems exhibited by young children with autism contribute to elevated levels of parental stress (e.g., Baker et al., 2002; Baker et al., 2003; Hastings & Johnson, 2001; Kasari & Sigman, 1997). Research has also suggested the child's lack

of social relatedness, more than problem behaviors, has contributed to higher levels of parental stress (Davis & Carter, 2008). There is evidence, however, that indicates parent training can alleviate some of the stress and increase the quality of responsive interactions between parents and children (e.g., Brookman-Frazee, 2004).

Parent training is an effective intervention model to address core deficits of autism spectrum disorder (e.g., Bearss et al., 2015; Ingersoll & Dvortcsak, 2010; Ingersoll & Wainer, 2013; Kaiser & Roberts, 2012; Kasari et al., 2015; Koegel, Symom, & Koegel, 2002; Landa et al., 2011; McConachie & Diggle, 2007; Rocha, Schreibman, & Shahmer, 2007; Rogers et al., 2012; Schertz & Odom, 2007; Schertz et al., 2013; Stadnick, Stahmer, & Brookman-Frazee, 2015; Steiner et al. (2013); Vernon et al., 2012; Vismara et al., 2009; Wallace & Rogers, 2010). For the purpose of the present study, only research that includes directly observable measures of parent and child behaviors are included for review. The reviewed interventions use strategies to train parents to teach reciprocity, social engagement, communication, and play. Parent training models that specifically involve toddlers include: Project ImPACT (Ingersoll & Dvortcsak, 2010), Pivotal Response Training (Vernon et al., 2012), Enhanced Milieu Training (Kaiser & Roberts, 2012), Early Start Denver Model (Vismara et al., 2009), and Joint Attention Mediated Learning (Shertz & Odom, 2007).

Methods to train parents include the use of descriptions, models, practice, and feedback (e.g., Ingersoll & Dvortcsak, 2010; Ingersoll & Wainer, 2013; Kaiser & Roberts, 2012; Rocha, Schreibman, & Shahmer, 2007; Schertz & Odom, 2007; Schertz et al., 2013; Steiner et al. 2013; Vernon et al., 2012; Vismara et al., 2009). Typically, trainers introduce a new technique using descriptions with supporting materials, such as manuals or handouts. Techniques are often

introduced one at a time and in a particular sequence; each technique builds on the last one. Trainers then model the desired skills and answer any questions the parents may have. The remaining part of the session is typically devoted to the parent practicing the skill with their child. Trainers are present to provide the parent with feedback. Towards the end of the session, parents are usually provided with homework to complete between sessions. This component generally includes setting aside time to practice the newly acquired techniques with their child, but also could include completing additional worksheets and parent notes.

In each of the training models, the focus is teaching parents to be responsive to their children's behaviors. This research evaluates and measures parent behavior such as contingent responsiveness, and language modeling and expansions (e.g. Ingersoll & Dvortcsak, 2010; Ingersoll & Wainer, 2013; Kaiser, Hancock, & Nietfeld, 2000; Kaiser & Roberts, 2012; Vernon et al., 2012; Vismara et al., 2009). Child behaviors are also evaluated to demonstrate the parent's effectiveness in changing interactions and producing desired changes in child progress. Child responding often includes social communication, joint attention, social attending or orienting, social imitation, and play skills (e.g., Ingersoll & Dvortcsak, 2010; Ingersoll & Wainer, 2013; Kaiser, Hancock, & Nietfeld, 2000; Kaiser & Robers, 2013; Rocha, Schreibman, & Stahmer, 2007; Schertz & Odom, 2007; Schertz et al., 2013; Steiner et al. 2013; Vernon et al., 2012; Vismara et al., 2009).

Evaluation and measurement at each point (parent behaviors; child behaviors; and the interaction between the two) is important for several reasons: for child skill acquisition and progress; for parent skills and confidence; and for the quality of the relationship (Trivette, 2003). The majority of toddler parent training interventions share the common goal of

enhancing the quality of parent-child interactions as well as individually addressing parent and child behaviors (e.g., Ingersoll & Dvortcsak, 2010; Ingersoll & Wainer, 2013; Kaiser, Hancock, & Nietfeld, 2000; Kaiser & Robers, 2013; Rocha, Schreibman, & Stahmer, 2007; Schertz & Odom, 2007; Schertz et al., 2013; Steiner et al. 2013; Vernon et al., 2012; Vismara et al., 2009). Only one study has included qualitative assessments of synchronicity. Schertz and Odom (2007) taught three mothers to implement the Joint Attention Mediated Learning Model with their toddlers. Targeted child behaviors included focusing on faces, turn taking, responding to joint attention, and initiating to joint attention. To shed light on parent's confidence, child's progress, and the relationship between the two, researchers used data from audiotaped parent-researcher discussions and parent notes. Results indicate that parent's view of child progress correlated with trends in quantitative data and the parent-child relationship improved. Only one study has directly investigated parent behaviors, child behaviors, and the interaction between the two. Vernon and colleagues (2012) taught three parents to implement Pivotal Response Training (PTR) plus embedded social reinforcers during interactions with their toddlers. Targeted parent behaviors included total language opportunities, child behaviors included eye contact and verbal initiations, and synchronous engagement was included as a measure of parent-child interactions. Results indicate that parent and child behaviors and synchronous engagement increased. The researchers suggest increases in synchronous engagement demonstrate clear moments of shared social enjoyment between the parent and child.

Supporting parents to be partners in the change process is another commonality seen in toddler parent training (e.g., Ingersoll & Dvortcsak, 2010; Ingersoll & Wainer, 2013; Kaiser,

Hancock, & Nietfeld, 2000; Kaiser & Robers, 2013; Rocha, Schreibman, & Stahmer, 2007; Schertz & Odom, 2007; Schertz et al., 2013; Steiner et al. 2013; Vernon et al., 2012; Vismara et al., 2009). Collaborative parent training models describe the program, assess the child's social-communication skills, and work with the parent to develop tailored goals for the child. Trainers provide parents with a training manual or supplemental materials that include information about each of the techniques used. Each technique is taught using a description and rationale of the technique; a discussion with the parent including tying the technique to the child's goals; trainer demonstration of the technique; parent practice of the technique with trainer feedback; and homework practice. Homework practice allows the trainer and parent to determine how and when to use the newly acquired technique(s).

In addition to collaboration, a video review component has been included in at least two training packages. Kaiser, Hancock, & Nietfeld (2000) taught six mothers to implement enhanced milieu teaching (EMT) with their children using video review. Parents viewed videotaped examples of themselves from previous sessions while the interventionist asked relevant questions and provided feedback. The interventionist's questions were not provided. The results indicate that parents were effective at teaching using EMT. Children demonstrated increases in communication targets and the complexity and diversity of language. Similarly, Schertz et al. (2013) used a video review component to teach parents to implement the Joint Attention Mediated Learning (JAML) model. Intervention Coordinators videotaped a 10-min parent-child interaction and facilitated a guided reflection in reference to the child targeted outcome (focusing on faces, turn taking, responding and initiating joint attention) and the mediated learning principles (focusing, organizing, encouraging, giving meaning, and

expanding). Results indicated statistically significant increases in child targeted responses including focusing on faces and child RJA, and moderate increases in turn taking and IJA. These were the only two parent-training studies that included a video review component.

The purpose of the present study is to evaluate the effectiveness of a parent training program for toddlers with autism. The program, Sunny Starts, is a university service-learning project designed to enhance the quality of the parent-child relationship by teaching parents a shaping strategy that involves responsiveness to the child's current repertoire and affect. The parents are taught to arrange the environment in ways that are reinforcing for both the parent and child, and to provide ongoing learning opportunities (Ala'i-Rosales, Cermak, & Guðmundsdóttir, 2013). The program focuses on ecologically valid methods that use criterion conditions in the design and implementation of teaching. Sunny Starts uses the acronym DANCE (Decide, Arrange, Now, Contemplate, Enjoy) to help parents remember the components of a teaching interaction. The components include an emphasis on the back-and-forth rhythm of interactions; attending to contextual variables; arranging the environment; setting the occasion for and responsiveness to child initiations and social attempts; and responding in a way that is mutually reinforcing, social, and fun (Ala'i-Rosales, Cermak, & Guðmundsdóttir, 2013). The acronym DANCE also highlights Hart and Risley's (1999) metaphor regarding "the social dance" between parent and toddler.

Since the beginning, Sunny Starts was designed to be flexible allowing for the incorporation of new procedures derived from current behavior analytic research and feedback from the families. Based on individual data, the interventionist makes changes to the program to maintain and promote progress towards goals. Previous topics of investigation have included

the effects of the teaching framework on indices of happiness (Broome, 2007), an analysis of parent-child interaction observation sample length (Lanio, 2007), methods to measure teaching episodes (Besner, 2008), the emergence of joint attention (Goettle, 2008), eye contact as a behavioral cusp (Newcomer, 2009), the feasibility of a telehealth component (Cermak, 2011), group training package targeting quality of life (Wiles, 2012), group training package on parent and child behaviors (Vaughn, 2012), generalized communication (Baker, 2013), parent self-observation (Townley-Cochran, 2013), and observed changes in synchronous parent-child interactions and concurrent skills training (Hunt, 2015). The current Sunny Starts training package includes: collaboration with the parents in choosing specific child target goals, modeling desired DANCE strategies, practicing strategies with feedback, parent video review component, concurrent skills training, and home integration procedures. Throughout the training, the DANCE acronym is emphasized. This serves as a reminder for the parents to use a teaching interaction as well as a metaphor regarding the "graceful and enjoyable social dance" that occurs between parent and child.

The purpose of this experiment is to study the effects of the Sunny Starts DANCE training package, a responsive parent training program, on three levels of parent and child behaviors: 1) teaching episodes, 2) turn taking, social attending, vocal requests, and 3) synchronous engagement.

METHODS

Participants

Two parents and their child participated in Sunny Starts, a parent training program for toddlers with autism. The family was selected to participate in the parent training program based on a referral from a local behavioral consulting agency serving families and children with autism. At the onset of clinical services, informed consent for the training was obtained. Following the completion of services, the family was contacted to provide satisfaction evaluations and permission to disseminate results for educational purposes. The family consented and both parents provided satisfaction evaluations.

Parents. The family consisted of the father, mother, and two boys. The father worked full-time outside of the home and traveled occasionally for work. The father was typically home in the evenings and weekends, and helped with routine activities such as bathing and mealtimes. The mother worked part-time from home in the afternoons and spent the remaining time with the child. At the onset of the study, the mother had recently completed a parent training program through an agency that provided early childhood intervention (ECI). The parent training program taught the mother strategies for non-vocal social-communication skills (social attending, pointing, and choice making).

Child. The child was 3 years and 3 months at the onset of participation. He had a diagnosis of autism spectrum disorder from a diagnostician independent of this project. At the start of this study, he was receiving Occupational therapy for one hour a week and Speech therapy for three hours a week. His parents initially sought parent training to increase his functional communication and to enhance parent-child relationships. Parents reported the

child's communication included leading gestures (e.g., pulling their hands or touching the desired object) or whines. Parent-child activities were brief with limited turn taking. Play interactions between the mother-son dyad typically involved the mother providing directives within the activity. The child generally ignored directives, and rarely completed the instructions. Play interactions between the father-son dyad typically involved listening to music or rough-housing.

Parent Trainers. One female graduate student completing her master's degree in behavior analysis, with five years of experience working in early intensive behavioral intervention (EIBI), served as the interventionist. The interventionist provided the applicable parent materials and completed all components of the parent training. A master's level BCBA, with over 15 years of experience working with families and children with autism, supervised all activities and provided supervision during the implementation of the parent training program. Additionally, a Ph.D. level BCBA-D, with over 30 years of experience working with families and children with autism, supervised all activities. One graduate student, with experience working in EIBI, assisted with data collection and material development.

Setting. Sessions occurred in the family's home and typically took place in the play room, living room, dining room, and kitchen. Each room contained a variety of preferred items and activities (e.g., musical toys, a radio, balls, puzzles, bubbles, small trampoline, and books).

Materials. The family received training materials including an introduction to Sunny Starts training program, a training timeline that depicted each phase of the program, an intake assessment complete with family preferences and goals, fundamental information about applied behavior analysis and basic teaching interactions, a resource packet, the DANCE, and a

home-helper form. Materials were adapted from Ala'i-Rosales, Cermak, & Guðmundsdóttir (2013), Baker (2013), Benser (2008), Broome (2007), Cermak (2011), Hunt (2014), Laino (2007), Newcomer (2009), Townley-Cochran (2013), Wiles (2012), and Vaughn (2012).

Data Collection and Measures

Data Collection. Observers collected data for each measure within a 5-minute videotaped assessment of the parent-child dyad. During baseline and intervention, sessions included a 5-minute pre-training assessment video. Pre-training assessment videos were taken prior to training in order to assess parent and child progress, to view during the video review component, and to select a parent goal for the current session. Assessment videos were transferred by the interventionist to a secure computer at the University of North Texas were trained observers scored data. The interventionist trained observers using written instructions, verbal explanations, video examples, practice scoring videos, and feedback. Observers scored all measures using a data sheet and pencil.

Inter-observer agreement. The interventionists and research assistant independently scored the videotaped assessments. Inter-observer agreement (IOA) was collected for at least 35% of all conditions across all measures. The interventionist calculated IOA for each measure by dividing the number of agreements by the total number of agreements plus disagreements and multiplying by 100. The average percentage of agreement for teaching episodes was 87.4% and 80.0% for the father and mother respectively. The average percentage of agreement for synchronous engagement was 90.6% and 87.8% for the father and mother respectively. The average percentage of agreement for child behaviors (turn taking, social attending, and verbal

requests) was 64.7% and 72.7% across the father and mother respectively. See Table 2 for a breakdown of IOA results.

Measures. The measures involved parent and child behaviors and parent-child interaction. Parent behavior included teaching episodes for all child target behaviors. Child target behaviors included turn taking, social attending, and verbal requests. Parent-child interactions included synchronous engagement. See Table 1 for a list of measures, recording methods, brief descriptions, and examples. Definitions were adapted from Ala'i-Rosales, Cermak, & Guðmundsdóttir (2013); Besner (2008); Brookman-Frazee (2004); Cermak (2011); Hunt (2015), Koegel, Symon, & Koegel (2002); Vernon, Koegel, Dauterman, & Stolen (2012); and Wiles (2012).

Number of teaching episodes. Parent behavior was measured in terms of teaching episodes. A teaching episode occurred when the parent arranged or captured a learning opportunity, the child engaged in a target response, and the parent delivered a consequence within 3 seconds of the child's response. A teaching episode could include more than one child behavior at a time. For example, if the parent provided the child with a choice of two different items to play with, the child requested the desired item with eye contact and vocal request, and the parent provided the desired item to the child, then a teaching episode for each of the child target behaviors (turn taking, social attending, and verbal requests) would be counted. The total number of teaching episodes; however, would be only one because three child target responses occurred simultaneously via one teaching episode.

Observers recorded the number of teaching episodes for each child target response (turn taking, social attending, and verbal requests). Teaching episodes for turn taking involved

one of two child responses: leading (instances in which the child initiates and engages with a different activity or item) and following (instances in which the child engages with an item or activity regulated by an adult). For example, if the child initiated playing with the musical mailbox by pressing buttons and the parent began playing along with the child, this would be recorded as an instance of child leading. If the parent started slipping letters into the slot and the child joined, this would be recorded as the child engaging in a following response.

Teaching episodes for social attending included orientation of the child's face and/or eyes to the parent that is in direct response to a vocalization or action made by the parent. For example, if the parent and child are playing with a musical toy, the parent turns off the toy and waits for the child to look at them. As soon as the child engages in eye contact, the parent turns on the musical toy and delivers it to the child.

Teaching episodes for verbal requests included any vocal sound, word, or phrase that the child emits that the assumed intent was to gain access to an item or activity. For example, the mother and child are jumping on a trampoline. The mother stops jumping and child looks up and says "juh." The mother responds by jumping again. In this case, the child made a verbal sound and gained access to jumping again (verbal request).

Seconds of parent-child synchronous engagement. Parent-child synchronous engagement was scored using 5-second partial interval recording. Observers defined parent-child synchronous engagement as when both parent and child displayed positive affect (e.g., visible and/or audible indications of interest, happiness, and/or enjoyment), while engaged with the same activity. For example, the father and child are seated across from a container filled with rice. During the 5-second interval, the father starts by pouring rice from a cup, high

above the container, into another cup. Once the cup is empty, the child picks up the other cup and starts pouring the rice into the container. Both the parent and child are actively interacting as they pour rice from one cup to the other cup and are observed smiling and occasionally giggling (displays of positive affect). This would be counted as synchronous engagement. The definition for synchronous engagement was adapted from Vernon, Koegel, Dauterman, & Stolen (2012).

Parent Satisfaction Survey. Following intervention, parents were asked to complete a brief open-ended questionnaire to assess satisfaction with the overall parent training program. Specifically, parents were asked about what they and their child learned, their likes and dislikes about training, the home integration process, likelihood of recommending this program to another family, their satisfaction with the interventionist, and personal obstacles the parents overcame. Parents provided brief narratives for each question.

Experimental Design

The design of this study was a concurrent multiple baseline design replicated across two parent-child dyads.

Procedures

General Procedures. The sequence and methods of this parent training program were adapted from previous Sunny Starts research (Ala'i-Rosales, Cermak, & Guðmundsdóttir, 2013). A timeline of activities is included in Figure 1. Sessions were conducted once to twice a week depending on the parent's schedule and lasted between 55 minutes and 90 minutes. Parents attended parent training sessions together once a week. The mother attended one additional

parent training session a week independently. The training program was completed in eight weeks. Actual training time for the mother was 12.5 hours and 7.5 hours for the father.

Baseline. Baseline sessions were designed to directly assess the current parent-child interaction before training and to establish a collaborative relationship with the family. Sessions begin with short greeting and proceed to a 5-minute videotaped assessment of the parent-child interactions. Parents were instructed to play with the child how they typically would. The mother and father took turns completing their assessment videos; typically, the mother went first while the father waited in another room of the house then vice versa.

Following the initial 5-minute video assessment, informational meetings were conducted to learn more about the family and the goals they had, to introduce parents to the Sunny Starts program, and to answer any questions the parents had. During the initial meeting, the interventionist reviewed the program materials with the parents. This included the overview of the mission and goals of Sunny Starts, the timeline for each phase of training (Figure 1), and the intake assessment. The intake assessment included a questionnaire that asked parents to describe: family goals and priorities, the child's interactions with others, the child's communicative abilities, and general family and child interests. Information from the intake assessment was used to identify both parent and child preferences (e.g. preferred items and activities) to aid in the individualization of the parent training.

During subsequent baseline sessions, the interventionist provided introductory information about Sunny Starts. This included concepts and practices within applied behavior analysis. Additionally, the parents were introduced to a basic teaching interaction. Specific examples of each component were provided and any questions the family had were answered.

Following the introductory information, the interventionist reviewed the community networking packet with the parents. The packet contained various local, regional, and national resources aimed at connecting the parents with resources that are applicable to their family's needs. Following the final 5-minute video assessment, the interventionist introduced and reviewed the DANCE framework (described in detail below). Examples were provided for each component of the DANCE in regards to the child's target goals.

Parent training. The goal of parent training was to enhance the quality of the parent-child interaction by teaching parents to arrange and capture learning opportunities. Parent training included 5-mintute video assessments, video review, descriptions, rationales, modeling, practice, and feedback. All sessions started with a short greeting between the interventionist, parents, and child.

Parents were taught to arrange and capture learning opportunities using the DANCE procedure. The DANCE is both an acronym and a metaphor. The acronym serves as a reminder for the components of a basic teaching interaction (discussed below). The metaphor was selected and informed by Hart and Risley (1999) who describe the typical parent-child interaction as a "social dance." This "social dance" provides the parent and child opportunities to lead and follow, and to stay with each other for no other reason than the shared enjoyment of the interaction.

During training, parents were taught to be responsive to their child's current repertoire using components of the DANCE training. Additionally, parents were taught to monitor the child's affect and to change teaching procedures, as necessary, to produce favorable interactions. The DANCE was broken into individual components and described to the parents

in relation to the teaching interaction. The D stands for *decide* which helps the parent determine if it is an appropriate time to teach (e.g., identifying target goals, environmental arrangements, and acceptable materials). This was the first step in identifying child preferences, which were inferred through the child's positive affect (smiles, laughter, interest). The next letter is A and stands for *arrange*. This helps parents remember how to arrange learning opportunities for their child to engage in desired behaviors (e.g., regulating and rotating access to preferred items, setting up fun environments, and capturing learning opportunities). The N stands for *now* and helps parents respond to the child's desired behavior by providing immediate and generous access to a preferred item or activity (e.g. the child requests "on" and the parent immediately turns on the preferred toy). The following letter, C, is *contemplate* and helps the parent evaluate the teaching procedures and the degree of progress. The last letter of the acronym, E, stands for *enjoy*. This reminded parents to arrange enjoyable activities and to monitor their child's affect while teaching. Several examples and rationales were provided for each component of the DANCE that were relevant to the parents and their child.

Assessment videos. Parent progress was monitored through data collected during a 5-mintue pre-training videotaped assessment. Pre-treatment video assessments were identical to baseline video assessments. Video angle was adjusted during video assessments to ensure data collectors could accurately view the parent and child's face.

Video review. Following the pre-training assessment, the interventionist and parents reviewed the video together. This component was designed to teach parents how to monitor their responsiveness to the child's current repertoire and affect. As the parent and

interventionist watched the video, they would choose short segments to pause and discuss. This included successful as well as troublesome occurrences of the DANCE procedure. For example, the parent and child were playing with a musical toy. The child made eye contact and provided an approximation to the word “on”. When the criterion was being met, the interventionist would stop the video to discuss and highlight how the parent implemented the DANCE procedures correctly (turned the musical toy on). When the criterion was not being met, the interventionist would pause the video to discuss ways to improve the implementation of the DANCE procedures (taking approximations to the word “on”). If the parents had questions or mentioned occurrences in which the criterion was or was not being met, the video was stopped for discussion. In this case, the interventionist provided encouragement, and often times, elaborated on their response to highlight how their performance affected the child’s responding.

Description, rationales, and models. After reviewing the video assessment with the parent, the interventionist would determine specific goals the parents needed assistance with. The rationale for selecting the goal was provided along with an explanation of how the goal broke down into the DANCE components. Specific examples were provided to help the parent integrate the goal into their daily interactions. The interventionist modeled the desired response with the child while providing verbal instructions. It is important to note that during session 8, the interventionist increased the number of models being provided to both parents.

Practice with feedback. After the interventionist modeled the desired response, the parent then practiced with the child. During the practice, the interventionist provided feedback in the form of encouragement or suggested alternative teaching strategies. If the parent still

needed some assistance, the interventionist modeled the desired response again while providing verbal instructions. Practice was discontinued once the parent frequently engaged in the desired responses.

Generalization Planning. At the end of the training session, the interventionist and parent would fill out a home-helper form. The home-helper displayed each of the DANCE components and served as a guide to assist the parent in incorporating teaching strategies into their daily routines. The interventionist provided recommendations on how to incorporate the DANCE components outside of training sessions and components the parents could work on between training sessions.

Follow-up session. Follow-up session took place for both parents and was conducted in the same manner as DANCE training sessions. The follow-up session occurred 4 weeks following program completion.

RESULTS

Results are shown in four figures. In all figures, the top tier represents Dad and Child and the bottom tier represents Mom and Child. Baseline, DANCE training, and follow-up sessions are indicated in each figure. Figure 2 represents the total number of the parent teaching episodes including teaching episodes for turn taking, social attending, and communication. Figure 3 represents total child responding (turn taking, social attending, and verbal request). Figure 4 represents the total seconds of parent-child synchronous engagement. Figure 5 displays parent teaching episodes for each of the child target responses (turn taking, social attending, and verbal requests, respectively).

Figure 2 displays the total number of teaching episodes for both parents. The x-axis depicts 5-minute assessments across days and the y-axis depicts the number of teaching episodes. Black circles represent the teaching episodes during the pre-training video assessment. During baseline, teaching episodes ranged from 3 to 4, and 5 to 6 for the father and mother, respectively. Following the DANCE training, the number of teaching episodes increased for both parents. For the father, teaching episodes drastically increased after the first DANCE training session from 6 to 15. Total teaching episodes remained fairly stable for the remaining DANCE training sessions averaging 15 teaching episodes per 5-mintue assessment. For the mother, teaching episodes increased from 5 to 11 between baseline and the implementation of the DANCE training. For the next three training sessions, total teaching episodes slightly decreased from 11 to 9. After the eighth session, total teaching episodes gradually increased ranging from 10 to 23. At follow-up, the father seen a slight decrease in total teaching episodes and the mother continued to increase in total teaching episodes.

Figure 3 displays the total child responses (turn taking, social attending, and verbal requests) across both parents. The x-axis depicts 5-minute assessments across days and the y-axis depicts the number of child responses. Open circles represent turn taking, gray circles denote social attending, and black circles depict verbal requests during the pre-training video assessment. For the father, child turn taking remained low averaging 12 during baseline. Following the first DANCE training session, turn taking increased immediately to 25 and remained stable. During baseline, child social attending ranged from 2 to 9. After the implementation of the DANCE training, social attending immediately increased to 23 but was variable for the remaining sessions. Verbal requests decreased in baseline from 8 to 3. Following intervention, verbal requests averaged 12.6 per session. For the mother, child turn taking ranged from 10 to 15 during baseline. After the DANCE training, there was a gradual increase in turn taking. During baseline, social attending averaged 5.7 per session. The intervention increased social attending to an average of 11.8 per session. For verbal requests, baseline measures show the child did not request more than 7 times in a session. Following the DANCE training, verbal requests ranged from 7 to 16. At follow-up, social attending and verbal requests sustained, while turn taking decreased with the father. All child behaviors increased with the mother.

Figure 4 depicts parent-child synchronous engagement. Along the x-axis is 5-minute assessments across days and along the y-axis is the duration of synchronous engagement. Black circles denote synchronous engagement. During baseline, the duration of parent-child synchronous engagement averaged 160 seconds for the father and 201.7 seconds for the mother. After the initial DANCE training, synchronous engagement increased for the father to

an average of 213, ranging from 145 to 270 seconds. For the mother, the duration of synchronous engagement declined to below baseline levels. After session 7, the duration of the mother-child synchronous engagement slowly improved to 245 seconds. At the follow-up session, synchronous engagement decreased for both parents.

Figure 5 displays the teaching episodes for each child target response (turn taking, social attending, and verbal requests). The x-axis depicts 5-minute assessments across days and the y-axis depicts the number of teaching episodes for each child target response (turn taking, social attending, and verbal requests). For turn taking, the black circles represent teaching episodes for turn taking and the open gray circle represent child leading behavior plus child following behaviors. For social attending, the black circles represent teaching episodes for social attending while the open gray circles represent total number of child social attending behaviors. For verbal requests, the black circles represent teaching episodes for verbal requests while the open gray circles represent total number of verbal requests.

For the father, teaching episodes for turn taking ranged from 3 to 4 in baseline. After the first DANCE training session, teaching episodes for turn taking and child turn taking immediately increase and remain stable. Teaching episodes for social attending averaged 1.5 in baseline. Following the first intervention session, teaching episodes for social attending immediately increased and averaged 10.6 per session. Teaching episodes for verbal requests remained fairly low during baseline ranging from 0 to 1. Following the DANCE training, teaching episodes for verbal requests increased ranging from 5 to 10. At follow-up, teaching episodes for social attending and verbal requests sustained, while teaching episodes for turn taking decreased.

For the mother, teaching episodes for turn taking ranged from 5 to 6 in baseline. In most instances, the mother was leading all the play interactions. Following the introduction of the DANCE training, teaching episodes remained low. After session 8, teaching episodes immediately increased. Teaching episodes for social attending ranged from 0 to 5 for the mother in baseline. Following the first intervention session, teaching episodes for social attending gradually increased ranging from 3 to 21. Teaching episodes for verbal requests remained fairly low in baseline. After the first DANCE training session, teaching episodes for verbal requests gradually increased ranging from 3 to 13. At follow-up, teaching episodes for all child target behaviors increased.

Results of the parent satisfaction survey indicated that both parents reported high levels of satisfaction with the program. Specifically, both parents reported their satisfaction with the child's improvements, overall satisfaction with the training, and would highly recommend this program to other families. When asked what the parents liked most about training, the father reported "the one-on-one training" while the mother stated "the interaction time with [her child]." Both parents also reported high satisfaction with the techniques used to incorporate the training into their lifestyle.

DISCUSSION

The purpose of this study was to evaluate the effectiveness of the Sunny Starts training program on three levels of parent and child behaviors. Sunny Starts was designed to enhance the quantity and quality of the parent-child relationship by teaching parents a shaping strategy. The shaping strategy emphasized responsivity to the child's current level of responding during teaching as well as the child's repertoire over time. Additionally, parents were taught to adjust teaching procedures based on the child's affect. That is, parents were taught to monitor the child's affect and continue with the teaching procedures as long as the child was displaying signs of positive affect (happiness, interest, and/or enjoyment). The parent's feelings were also taken into account. If the parent was enjoying the interaction and results, then the parent was encouraged to continue with the teaching procedure. If either the parent or child was unhappy or distressed, then the teaching should be adjusted. Thus, parents learned to arrange the environment in ways that were reinforcing for both the parent and child, and to provide learning opportunities during typical interactions with their child (Ala'i-Rosales, Cermak, & Guðmundsdóttir, 2013). Following training, increases were seen in parent teaching episodes and in child turn taking, social attending, and verbal requesting behavior. Additionally, the duration of parent-child synchronous engagement increased slightly and maintained at the follow-up visit for both parents. Furthermore, parents reported qualitative and meaningful changes as a result of the training.

Past research has evaluated the effectiveness of a general training sequence that includes collaboration with parents regarding the development of child goals, descriptions and rationales of techniques, verbal instruction and modeling of desired techniques, and parent

practice with feedback (Ingersoll & Dvortcsak, 2010; Ingersoll & Wainer, 2013; Kaiser & Roberts, 2012; Rocha, Schreibman, & Shahmer, 2007; Schertz & Odom, 2007; Schertz et al., 2013; Steiner et al. 2013; Vernon et al., 2012; and Vismara et al., 2009). This study used similar training methods for the parents. The current study also included generalization planning at the end of every session to help parents incorporate newly learned skills into their daily interactions with their child. Parents reported that receiving the training together provided them with a support system. They were able to help and support each other between sessions and work towards goals together. Generalization planning has been shown to be effective in producing generalization and maintenance of parent skills outside of normal training sessions (Ingersoll & Dvortcsak, 2010; Ingersoll & Wainer, 2013; Kaiser & Roberts, 2012; Schertz & Odom, 2007; Schertz et al., 2013; Vernon et al., 2012; and Vismara et al., 2009). Furthermore, a video review component was included in the training procedures (Kaiser, Hancock, and Nietfeld, 2000; and Schertz et al., 2013). This provided parents with the opportunity to evaluate their implementation of the DANCE training with guided reflection from the interventionist. The findings of this study support the effectiveness of these training procedures.

Sunny Starts is a service-learning project (Hartman, 1999) designed to benefit the community while teaching graduate students how to effectively and compassionately implement intervention, training, and research (Ala'i-Rosales, Cermak, & Guðmundsdóttir, 2013). In the process, the graduate student learns skills to be a successful interventionist. This brings up for discussion the interventionist's role in a parent training model. Their role is more complex than simply following a particular training sequence. This could prove to be challenging for an interventionist still developing important clinical skills. While the

interventionist of the present study was skilled in most aspects of the training, the modeling component proved to be difficult in the beginning of intervention. It was not until the faculty advisor provided additional feedback to the interventionist that models were increased (after session 8).

In discussing the role of the interventionist, Schertz & Odom (2007) stress the importance of the interventionist's understanding the foundational knowledge behind the parent training model as well as being skilled in making information assessable to adult learners, in providing feedback to parents based on ongoing assessment of parent's understanding, in providing support and encouragement to the parents, and in addressing parents' concerns. Along similar lines, Ala'i-Rosales, Cermak, and Guðmundsdóttir (2013) recommend interventionists should have friendly parent interaction skills (hopeful, attentive, kind), excellent communication skills (responsive, clear, accurate), master autism interventions skills (BACB Autism Task List), master toddler play skill repertoire (fun, interactive, responsive), advanced training skills (narrating, instructing, modeling, feedback), and good organizational and technical skills (data, schedules, materials). Schertz and Odom (2007), Ala'i-Rosales, Cermak, and Guðmundsdóttir (2013), and the experiences in the current study underscore the importance of interventionist preparation.

In addition to supporting and extending past findings on effective training methods, this study also supports and extends the research on directly measuring changes in parent and child behaviors. In regard to parent behaviors, previous research has measured basic teaching interactions in various ways (Ingersoll & Dvortcsak, 2010; Ingersoll & Wainer, 2013; Kaiser, Hancock, & Nietfeld, 2000; Kaiser & Roberts, 2012; Vernon et al., 2012; Vismara et al., 2009).

Several researchers have used fidelity scales to evaluate the parent's use of the teaching techniques, specifically setting up learning opportunities and providing consequences for the child's response (Ingersoll & Dvortcsak, 2010; Ingersoll & Wainer, 2013; Vismara et al., 2009). Four research groups have used direct measures. Kaiser, Hancock, & Nietfeld (2000) directly measured parent's implementation of the Milieu teaching using teaching episodes (capturing or contriving learning opportunities, expanding, contingent reinforcement) and Kaiser and Roberts (2012) used a similar approach to measure parent's responsiveness to the child. Rocha, Schreibman, & Shahmer (2007) also directly measured the correct implementation of JA bids by the parent and the correct application of contingencies following the child's response using a partial interval recording method. Lastly, Vernon et al. (2012) scored the occurrence of total language opportunities (parent verbalization to elicit a child's verbal response, child response, and reinforcement with motivating social interaction). Results of these seven studies indicated an increase in the parent's use of a basic teaching interaction during interactions with their children.

The present study supports previous research by counting teaching episodes – the parent's ability to arrange a learning opportunity, either by creating or capturing, the child engages in a desired response (turn taking, social attending, and/or verbal request), and the parent delivers a consequence. Parents demonstrated increasing success in setting up or capturing basic teaching interactions while increasing turn taking, social attending, and verbal requests. Parents also reported using teaching interactions outside of regular training sessions. The father reported incorporating more teaching interactions into regular play activities such as water activities (waiting for desired response before pouring water), jumping on the trampoline

(pausing while jumping to wait for a desired response), and chasing the child around the yard (catching child and waiting for a target response to continue the chasing). The mother also reported incorporating more teaching interactions into play activities but mentioned noticed improvement using the "Decide," "Arrange," and "Now" components of the DANCE training. For example, the mother started to identify numerous teaching opportunities throughout the day (decide component) in routine activities. She also reported if the child, at any time, made a vocal request, she would immediately provide the requested item. One instance occurred while the mother was driving. The child dropped a toy in the backseat and said "mama" while pointing to the item. The mother immediately pulled over the car and got the item for the child. Clearly, by her analysis and descriptions of the DANCE components, "Contemplate" and "Enjoy" were addressed. Both her video review and her satisfaction survey address her analysis of effective teaching strategies and her observation regarding both her and her son's enjoyment.

The research has also shown similar increases in child behaviors such as turn taking, social attending, and verbal requests that correlate with parent's improved use of basic teaching interactions (Ingersoll & Dvortcsak, 2010; Ingersoll & Wainer, 2013; Kaiser, Hancock, and Nietfeld, 2000; Kaiser & Roberts, 2012; Rocha, Schreibman, & Shahmer, 2007; Schertz & Odom, 2007; Schertz et al., 2013; Steiner et al. 2013; Vernon et al., 2012; and Vismara et al., 2009). Three have shown more balanced turn taking between the parents and child during play activities (Kaiser, Hancock, and Nietfeld, 2000; Schertz & Odom, 2007; and Schertz et al., 2013). In the present study, similar results were seen. Turn taking was described as instances in which the child performed one of the following actions: initiates and engages with a different activity or the child engages with an item or activity that is regulated by their parent. Child turn taking

behaviors increased for both parents after implementation of the DANCE training package. During baseline, social activities were short-lived and limited in turn taking. Neither parent followed the lead of the child and often initiated activities the child was not interested in or provided directives. During the intervention, the father started leading the child in more balanced turn taking activities. For example, the father would start pouring the rice from one container to another while the child was oriented towards him. Once the container was empty, the father would hand it to the child so he could scoop and pour the rice from one container to another. The father would then ask for the container back. Similar outcomes were seen for the mother. During baseline, play interactions between the mother-son dyad typically involved the mother providing directives within the activity. The child generally ignored directives, and rarely completed the instructions. During intervention, the mother improved at providing opportunities for the child to lead in activities. For example, the child often engaged with a musical mailbox by spinning a lever that produced music. The mother captured the opportunity to engage in turn taking by inserting small envelopes into the top of the mailbox and then providing the child a turn to insert the envelopes. This back-and-forth interaction between the father-son and mother-son dyads prolonged the activity and increased the enjoyment for everyone.

Social attending is another child behavior directly targeted in five of the parent training models (Rocha, Schreibman, & Shahmer, 2007; Schertz & Odom, 2007; Schertz et al., 2013; Steiner et al. 2013 and Vernon et al., 2012). Results have shown increases in social attending can have positive effects on parent-child interactions. In the current study, increases in social attending were seen across both parents. During baseline, the child engaged in low levels of

social attending. Neither parent, however, demonstrated the ability to capture or contrive teaching episodes for social attending. During intervention, increases were seen in social attending. For the father, he was able to capture, arrange, and reinforce more instances of social attending behaviors, which lead to an increase in social attending behaviors. For the mother, during baseline, she was observed frequently positioning the child in front of her or in her lap to engage in an activity. Following training, the mother and child engaged in more activities side by side, or face to face. This environmental arrangement increased the likelihood that the child would orient towards the mother instead of the activity.

Another child behavior commonly found in the literature is verbal requesting. Seven studies have shown that parents are able to successfully capture or contrive opportunities to elicit child verbal requests (Ingersoll & Dvortcsak, 2010; Ingersoll & Wainer, 2013; Kaiser, Hancock, and Nietfeld, 2000; Kaiser & Roberts, 2012; Steiner et al. 2013; Vernon et al., 2012; and Vismara et al., 2009). The present study, supports previous findings. Increases in the child's verbal requests were seen across both parents. During baseline, neither parent reinforced approximations to verbal requests. Parents had previously heard the child request for an item once using the word "on." Since this experience, parents were expecting the word "on" to be said before providing the child with a desired item that required the parents to turn the toy on. The child would provide several approximations to the verbal model ("on") the parents provided, but would start to whine when the desired item was not provided. The parents would provide the child with the desired item to prevent a tantrum from occurring. During the DANCE training, parents started immediately reinforcing approximations to requests, which in turn, lead to an increase in verbal requests. The child eventually started to seek out parents for

desired items. For example, the child would grab the mother's hand and lead her to the musical monkey. He would provide an approximation to the word "on" and the mother would immediately reinforce his approximation by turning on the monkey. This lead to increased engagement in activities and enjoyable interactions between the parent and child.

The measure and changes observed in synchronous engagement between parent-child dyads replicates and extends the findings of Vernon et al. (2012). Synchronous engagement is a quantitative measure used to determine the extent of mutually reinforcing interactions. Sunny Starts was designed to enhance the quality of parent-child relationship by monitoring the overall enjoyment of the interaction. Parents were specifically taught to arrange and reinforce enjoyable activities through the E component of the DANCE training. The increases in synchronous engagement demonstrated by both parent-child dyads may suggest the interaction became mutually reinforcing for both partners. Both parent and child looked happier and stayed together for longer periods. Results are somewhat different from the results of Vernon et al. (2012). In the Vernon et al. (2012) study, gradual increases in synchronous engagement were seen up to 70 seconds for one parent-child dyad and variable for the other two parent-child dyads (5 to 75 seconds and 0 to 45 seconds, respectively). However, for all three dyads, synchronous engagement increased from previous baseline durations. In the present study, the parents and child had high durations of synchronous engagement in baseline that continued into intervention. For the father, synchronous engagement averaged higher durations during intervention than in baseline. However, for the mother, synchronous engagement was below baseline levels for the majority of the intervention but gradually increased.

Although the intervention did not hurt the parent-child relationship, the increase in synchronous engagement was not the main effect of the intervention. For the parents, the intervention taught them how to use teaching episodes to increase desirable child behaviors (social attending, turn taking, and verbal requests). Parents learned the DANCE in a way that allowed: observing and responding to their child's current skills/repertoire; using affect to gauge effectiveness of their teaching; and adjusting their behavior to further child progress and enjoyment on both the parent and child's part. Prior to the intervention, the parents and child were often seen engaging in various toys, but parents were never responsive to the current skills of the child. For example, the parents expected the child to use the word "on" to request desired items even though the child never reliably said the word "on." Frequently the child would lose interest in the toy and move on to something else. During the DANCE training, the parents were more responsive to the skill set of the child. The parents would reinforce closer approximations to the word "on" and make adjustments to the teaching procedures if the child was not enjoying the interaction. This example further supports research suggesting shared experiences between the parents and child can improve and prolong the parent-child social interaction (Dawson et al., 2004; and Hart & Risley, 1999).

Schertz and Odom (2007) was the only study that presented extensive qualitative analysis. Four other studies presented results from a social validity rating scale (Ingersoll & Dvortcsak, 2010; Kaiser, Hancock, & Nietfeld, 2000; Rocha, Schreibman, & Stahmer, 2007; and Steiner et al., 2013). The present study included parent's views of child progress and intervention expressed in weekly discussions and satisfaction surveys. The results mirrored trends in quantitative data and ratings seen in previous research (Ingersoll & Dvortcsak, 2010;

Kaiser, Hancock, & Nietfeld, 2000; Rocha, Schreibman, & Stahmer, 2007; Schertz and Odom, 2007; and Steiner et al., 2013). The qualitative data collected in the present study provided additional insight into variables associated with child progress and the parents use of the intervention techniques. For both parents, improvements were seen. The father reported learning "how to interact with my child on a level that promotes interaction, verbal, and eye contact." Similarly, for the mother, she expressed "connecting deeper" with the child in everyday interactions. Increasing trends in synchronous engagement mirrored the parent's expressed enjoyment in the interaction. The parents also expressed that the child learned to play with them and increased his interest in various toys. Parent's implementation of the shaping techniques gradually increased over time too. As parents practiced the components of the DANCE, they learned "this type of therapy can happen all the time." The DANCE was easy for them to incorporate into their daily lives since training was completed in their home and within typical activities. Dad reported "everything we did [in training] incorporated our daily lives which often involved our struggles as well as our success stories." Parents were able to practice setting up and capturing learning opportunities within training that lead to increases in total parent teaching episodes. As parents increased their use of the teaching episodes, changes were seen in their child's responses (turn taking, social attending, and verbal requests).

This study both supports and extends previous research by including multiple levels of measurement and demonstrating the effectiveness of parent training packages for toddlers with autism. Both quantitative and qualitative data suggest meaningful changes at all three levels (parent behavior, child behaviors, and parent-child interaction). Through the DANCE training package, parents quickly learned to direct their behavior towards increasing child

desired behaviors and enjoyment for their child and themselves. This, in turn, led to maintenance and slight increases in synchronous engagement.

Table 1

Measures, Recording Methods, Brief Descriptions, and Examples

Measure	Recording Method	Brief Description	Example
Teaching Episodes	Frequency	The child engages in a target response and the parent capitalizes on this response by providing access to a preferred item within 3 sec.	The child reaches for a block and looks at his parent. The parent captures this moment and hands the child the block 2 sec after the child response.
Turn Taking	Frequency	Instances in which the child performed one of the following actions: initiates and engages with a different activity or the child engages with an item or activity that is regulated by their parent.	The parent and child are playing with a musical piggy bank. The mother inserts a coin and then provides a coin to the child to place in the piggy bank.
Social Attending	Frequency	Instances in which the child's face and/or eyes are oriented toward the parent in direct response to a parent initiation.	The parent blocks access to a train. The child looks at the parent and the parent delivers access to the train 1 sec after the child response.
Verbal Requests	Frequency	Any child vocal sound, word, or phrase (assumed intent to gain access).	Mother and child are jumping on the trampoline. Mother stops jumping, child looks up and says "juh." Mother begins jumping again.
Synchronous Engagement	5-sec partial interval	Both parent and child are simultaneously engaged in *positive affect* at one another while actively *engaged* with the same item or activity.	Mom and child are playing with a musical clock. The child looks at mom and says "mmmm" and the mom smiles and says "music" and turns on the music.

Table 2

Percent of Average Interobserver Agreement

Measure	Dad and Child	Mom and Child
Teaching Episodes (Turn Taking, Social Attending, and Verbal Requests)	87.4%	80.0%
Synchronous Engagement	90.6 %	87.8%
Turn Taking	57.8%	67.0%
Social Attending	76.3%	83.9%
Verbal Requests	60.0%	67.3%

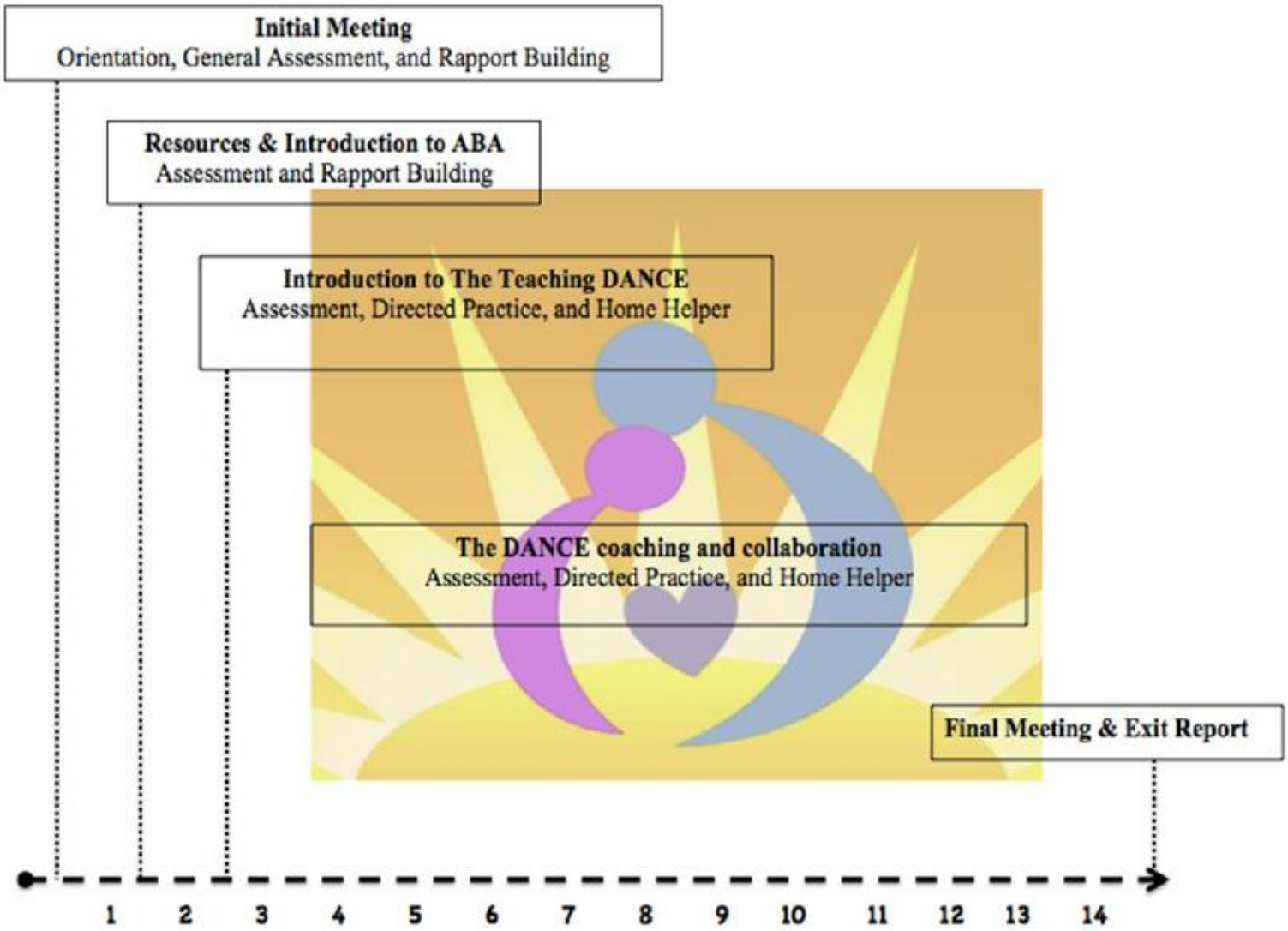

Figure 1. Sunny Starts parent training outline

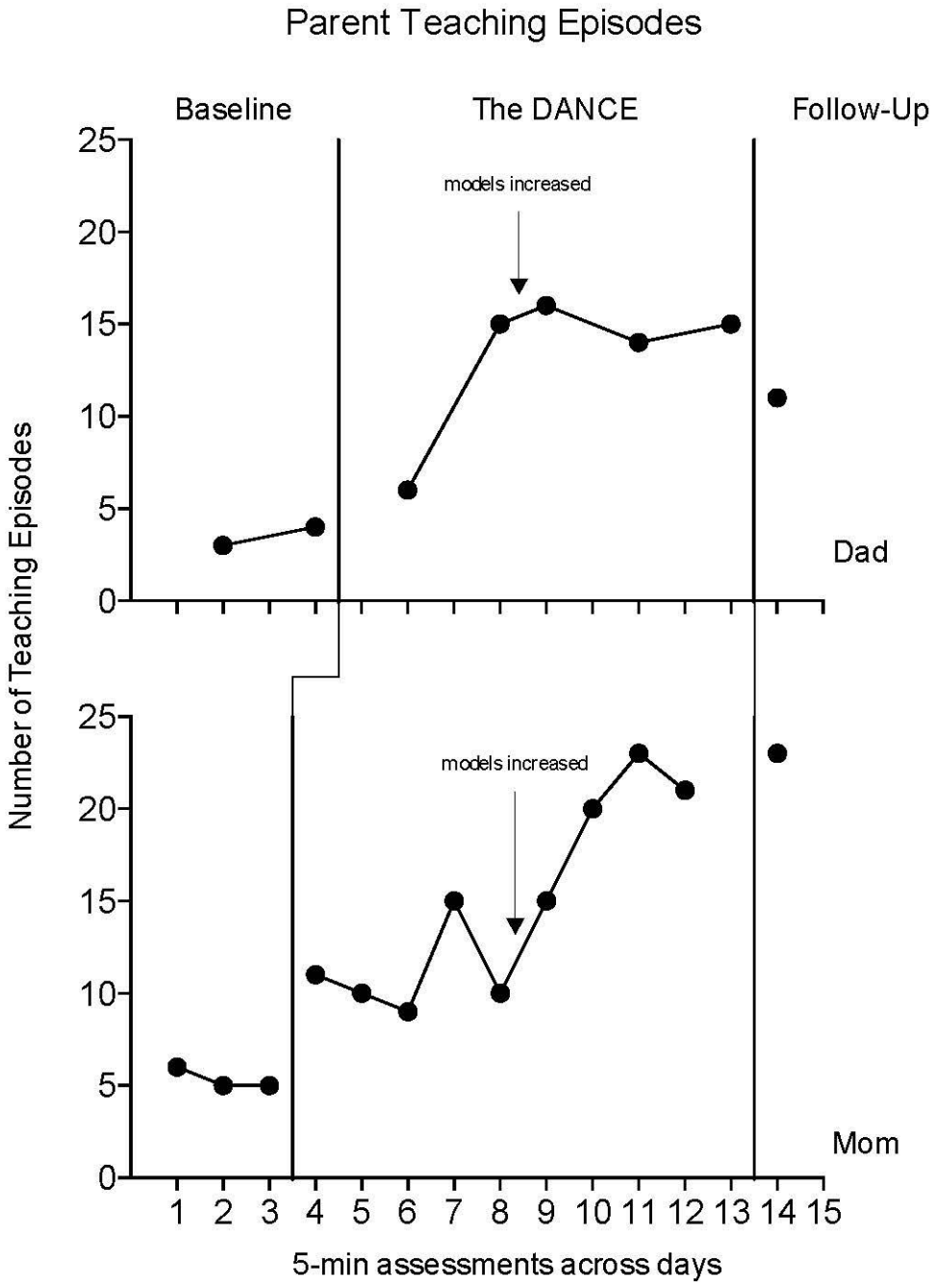

Figure 2. Total parent teaching episodes of all child target skills (turn taking, social attending, and verbal requests) across 5-min assessments.

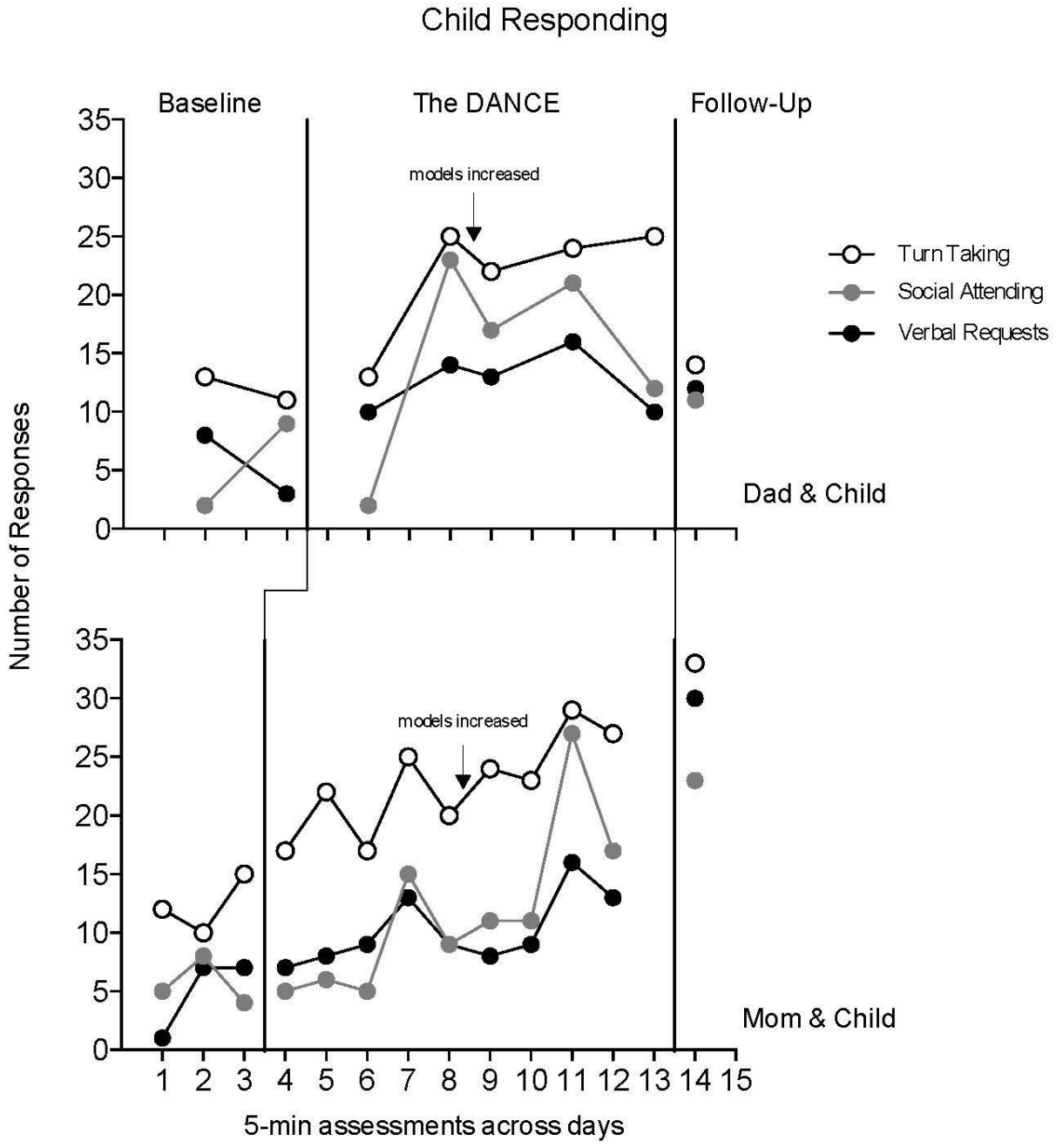

Figure 3. Total child responses (turn taking, social attending, and verbal requests) across 5-min assessments.

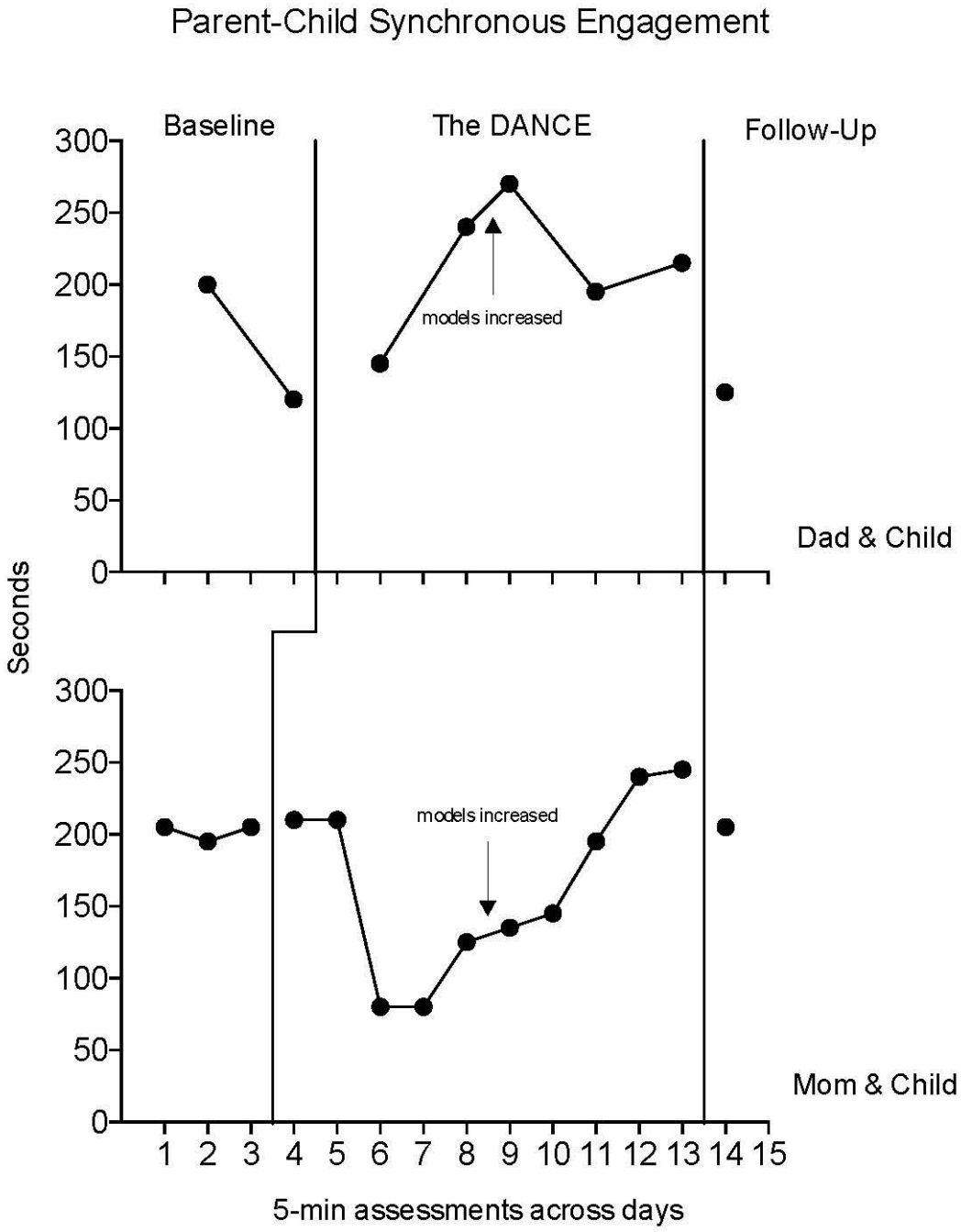

Figure 4. Seconds of parent-child synchronous engagement across 5-min assessments.

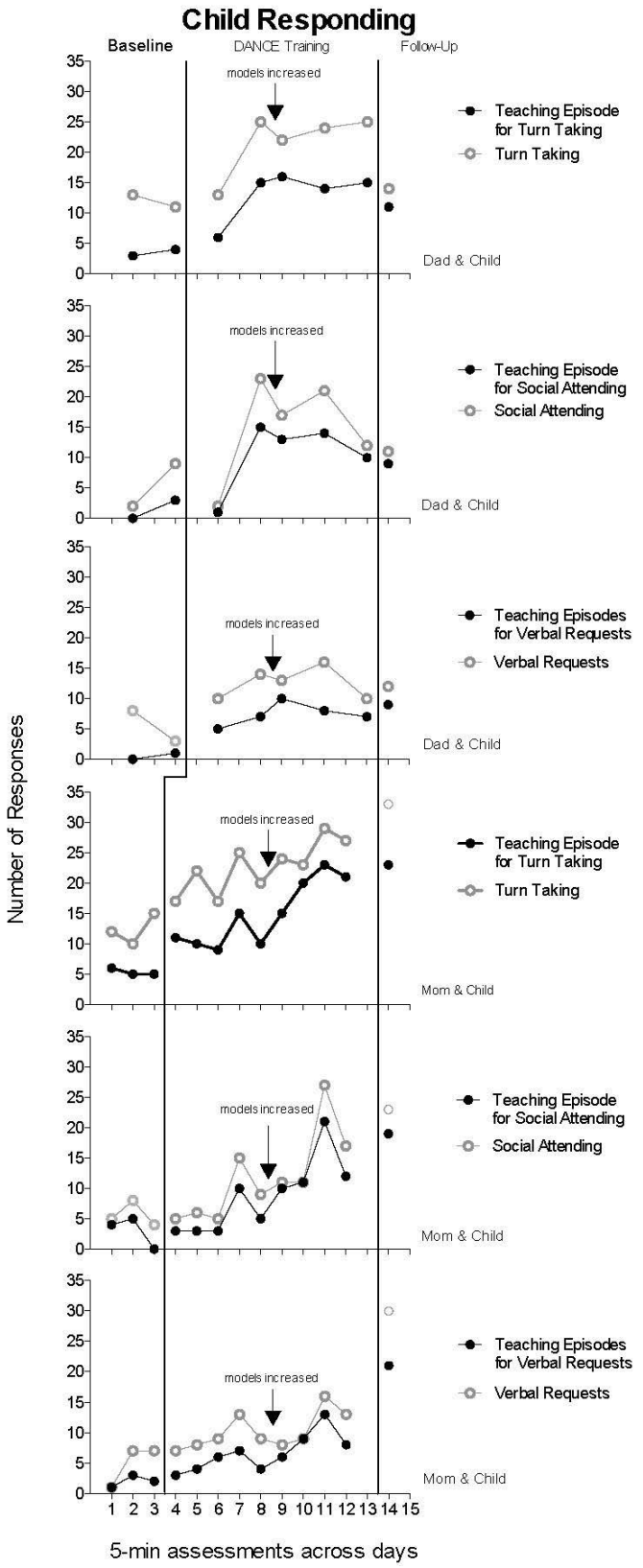

Figure 5. Parent teaching episodes for each child target skills (turn taking, social attending, and verbal requests) across 5-min assessments.

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