Supporting Parents to Facilitate Communication and Joint Attention in Their Young Children With Autism Spectrum Disorders
Two Pilot Studies

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THIS ARTICLE describes 2 pilot studies partnering early interventionists and families in targeting social communication and joint attention abilities for young children with autism spectrum disorders. Both parent-intervention trainings involved opportunities for interventionists to partner with families. One pilot utilized *More than Words* (MTW; Sussman, 1999), a parent-training program designed to facilitate communication and vocabulary development. Outcomes of the MTW study were measured as changes in children's vocabulary development and social communication skills and parents' perceptions of changes in their responsiveness to their child. The second pilot-trained interventionists to collaborate with parents in selecting 1 of 2 approaches to teach joint attention: a discrete trial plus pivotal response training based in behaviorist theory or developmental-mediated learning, based in social–interactionist theory. This collaboration involved interviewing families about their current interaction styles, the structure of their day, and their typical routines to help determine if a more behavioral or naturalistic approach was best matched to the family's preferences. It also involved the collaborative selection of motivating toys and activities to be used during intervention. Outcomes of the Joint Attention Training (JAT) study were measured primarily as impressions on the part of interventionists about the process of negotiating and implementing intervention approaches with parents. Findings for the MTW pilot-confirmed previous research identifying positive change for children in their social interaction and vocabulary development when their parents are engaged and trained as language interventionists. Interventionists' impressions after JAT also were positive for collaborating with families to select intervention approaches that best fit their needs and priorities. **Key words:** *autism spectrum disorders*, *communication*, *family-centered care*, *joint attention*, *parent training*

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THE assessment and intervention practices of speech–language pathologists (SLPs) and other early interventionists who work with families and children with special needs should be shaped by family priorities as well as the unique strengths, cultural beliefs, and values families bring to the teams that support

their children (Beatson, 2006, 2008; Bruns & Steeples, 2001; Crais, 1991; Prelock, Beatson, Bitner, Broder, & Ducker, 2003). Prioritizing families' goals and engaging them in dialogue about assessment and intervention are particularly important for parents of children with autism spectrum disorders (ASD), who tend to have pervasive needs across domains of communication, social interaction, and behavior. In fact, families of children with ASD are more likely to have unmet needs for health care and family support services, receive delayed care and referrals, and experience a lack of family-centered care when compared to parents of children with other disabilities (Kogan et al., 2009). Moreover, although children with ASD may receive more educational services than other children, more than 60% of parents are less than satisfied with those services (Spann, Kohler, & Soenksen, 2003). Some express wanting their children to be moved to another school (Kasari, Freeman, Bauminger, & Alkin, 1999). Furthermore, compared with parents of children with other disabilities, parents of children with ASD feel that their primary care physicians are unable to answer their questions and understand the impact of their child's disability on the family (Liptak et al., 2006). Families also are less satisfied than parents of children with other disabilities with the primary health care services received for their child and family since diagnosis (Siklos & Kerns, 2006). The reported experiences of families of children with autism reinforce the need to engage parents early on, with increased opportunities for creation of and involvement in the intervention and program planning for their children (Keenan, Dillenburger, Doherty, Byrne, & Gallagher, 2010).

TWO PILOT STUDIES

The purpose of this article is to describe 2 pilot studies that engaged interventionists and families in the planning and implementation of evidence-based interventions for young children with ASD. The first pilot study utilized one of the Hanen Programs for children with ASD, *More than Words* (MTW; Sussman,

1999). MTW is a parent training derived from a social pragmatic developmental perspective to facilitate communication and vocabulary development. The goals emphasized in the MTW program include increasing parent–child interaction and vocabulary. Specific objectives aimed at components of four stages of a child's early communication development are targeted. These stages are referred to as the child's "own agenda" (preintentional) stage, the "requester" (prelinguistic) stage, the "early communicator" (first words) stage, and the "partner" (word combination) stage. Overall, parents learn to teach new reasons for communicating and to facilitate a connection between what is being said and what is happening (Sussman, 1999). Parents participating in the MTW program learn specific strategies to support their children's communication. These include observing, waiting, and listening to their child; including their child's interests in play, imitating their actions, interpreting their intentions, and intruding on their activities; saying less, going slow, and emphasizing or stressing critical information; and showing their child what to focus on or how to do things.

The second pilot study trained interventionists to collaborate with parents in selecting one of two approaches to Joint Attention Training (JAT) using parents as the primary interventionists (Rocha, Schreibman, & Stahmer, 2007). One approach used a combination of discrete trial training and pivotal response training to teach children with autism to respond to caregiver initiations (Whalen & Schreibman, 2003). The second approach used a developmental mediated learning procedure in which caregivers facilitated their children's ability to focus on faces, take turns, and respond to and initiate joint attention in natural contexts (Schertz & Odom, 2007).

The parent-intervention trainings investigated in these two pilot studies (involving three intervention approaches) created a number of opportunities for interventionists to partner with families in the intervention planning for their young children with ASD. This report focuses on outcomes related to those partnering activities. In the MTW

study, the outcomes were measured in terms of changes in children's vocabulary and communication skills as well as parent perceptions of satisfaction and the value of parent training using MTW. In the JAT study, the outcomes were measured primarily in terms of the perceptions of the interventionists with parent perception of satisfaction with JAT.

To begin, a brief review of the value of family-centered approaches to service delivery and the role of parents will be discussed. Next a description of the two approaches selected to teach parents strategies for facilitating communication and joint attention will be presented. Lessons learned from the intervention planning and implementation with families, challenges encountered, and actions for change are provided next, along with comparisons and contrasts between the interventions that have implications for facilitating decision-making processes with families. Finally, clinical implications and directions for future research are identified. Our view is that professionals who journey with families along the intervention experience have a unique opportunity to enhance their own competence as family-centered, culturally competent clinicians.

FAMILY-CENTERED APPROACHES TO SERVICE DELIVERY

The term *family-centered* was formally defined in the late 1980s when a group of families and professionals came together to describe the key elements of family-centered care (Shelton & Stepanek, 1994). One of those key elements is the notion of constancy in the care families provide for their children with special needs. This is an important consideration in intervention planning and implementation as team members serving a particular child and family may change yearly (Giangreco, Edelman, Nelson, Young, & Kiefer-O'Donnell, 1999), whereas the family typically remains constant in the child's life. Another critical element of family-centeredness is the recognition that each family has its own culture (Beatson, 2008; Fadiman, 1997; Kavanagh, 1994; Patterson, 1995;

Turnbull, Friesen, & Ramirez, 1998), which has implications for the ways in which professionals approach recommendations and address the constraints that may impact service delivery. A third integral component of family-centered care is the recognition that all families have strengths (Ahmann, 1998; Dunst & Trivette, 1996; Dunst, Trivette, & Hamby, 1996; Kavanagh, 1994; Patterson, 1995; Prelock, 2006; Weick & Saleebey, 1995). For example, professionals can identify situations, tasks, and activities that already exist in the home environment that are most conducive to successfully implementing targeted intervention, thus capitalizing on a family's strengths.

Incorporating family-centered care into practice can lead to improved outcomes for families of children with special needs and disabilities, including increased satisfaction and family involvement, and enhanced family coping (Horst, Werner, & Werner, 2000). Clinical researchers also have seen the value of engaging families in the assessment and intervention process from the point of first encounter through data collection, assessment and intervention planning, and program implementation, increasing the likelihood that outcomes being targeted and measured are valued by families (Bruns & Steeples, 2001; Crais, 1991; Paul, 2007; Prelock et al., 2003).

ROLE OF FAMILIES AS INTERVENTIONISTS

Parenting a child with ASD brings tremendous responsibilities. A partial list includes frequent medical appointments and school meetings, managing support services, advocating for needs, and coordinating care—not to mention the everyday demands of parenting any child. The unusual responsibilities are likely to heighten parental stress and social isolation. They increase the need for establishing meaningful and effective family or professional partnerships for program planning and intervention. In fact, the evidence shows that when family-centered care is practiced, outcomes are enhanced for children with autism and other disabilities (Beatson, 2006; Beatson & Prelock, 2002; Horst et al., 2000).

Furthermore, family involvement and collaborating around shared intervention goals have strong support in the literature for achieving positive outcomes for children with ASD (National Research Council, 2001; Sperry, Whaley, Shaw, & Brame, 1999).

During infancy and toddlerhood, families are frequent participants in intervention. Their responsibilities range from interventionist to observer or informant (McClannahan, Krantz, & McGee, 1982). Research indicates that parent-implemented intervention leads to positive outcomes for children with ASD and other neurodevelopmental disabilities (Koegel, Bimbela, & Schreibman, 1996; Schreibman, Kaneko, & Koegel, 1991; Seifer, Clark, & Sameroff, 1991). Furthermore, parents have been shown to be successful at learning intervention strategies that lead to functional outcomes for their children (Kaiser, Hancock, & Nietfeld, 2000). Several studies have examined parents' abilities to support the communication and social responsiveness of their children with ASD (Aldred, Green, & Adams, 2004; Delaney & Kaiser, 2001; Mahoney & Perales, 2003; Moes & Frea, 2002; Siller & Sigman, 2002). Results of these studies indicate that, after intervention, parents respond more sensitively to their children with ASD and improve in the ability to interpret their children's actions as meaningful (Aldred et al., 2004). Parents are also reported to provide effective intervention targeting communication, language, and play (Delaney & Kaiser, 2001; Moes & Frea, 2002; Siller & Sigman, 2002) and, to use responsive interactions to enhance the social–emotional functioning of their children (Mahoney & Perales, 2003).

Engaging parents in intervention planning and implementation increases the likelihood that specific routines and activities in the home will be identified that can provide meaningful opportunities to practice skills (Strain, McGee, & Kohler, 2001). Interventionists implementing family-centered approaches recognize the importance of considering a family's individualized priorities, values, beliefs, and interests (Allen & Petr, 1996; Beat-

son, 2006, 2008; Prelock, 2006; Prelock et al., 2003). In the discussion of the two pilot studies that follow, we recognized that parents working with their children can facilitate both their competence and confidence in their interactions with their child with ASD and ultimately improve the quality of life experienced by the entire family (Turnbull & Ruef, 1997).

RESEARCH QUESTIONS

Considering what prior research shows about the potential of parents as interventionists and the critical need for establishing social communication in young children with ASD, our research team posed the following question: How do we incorporate our approach to family-centered care into the process of helping families and early interventionists select and implement interventions that will address outcomes prioritized by families for children with ASD? In addition, we asked: How do interventionists and families negotiate choices of intervention approaches that are based in competing theoretical perspectives (e.g., relationship-based vs. naturalistic behavior change)?

To answer these two questions, we present preliminary findings of two pilot studies. Both studies employed interventions that require parent commitment to active engagement with their child facilitated through information sharing, modeling, and coaching. The "MTW pilot study" involved implementation of the MTW approach (Sussman, 1999), which is designed to support early vocabulary development and social interaction. The "JAT pilot study" involved working with parents to select one of two approaches to JAT: a relationship-based intervention approach (Schertz & Odom, 2007) and a naturalistic behavior modification approach (Whalen & Schreibman, 2003). Each approach is designed to facilitate shared referencing to a particular object or activity with a communication partner, but they are based in distinct theoretical perspectives. Both the MTW and JAT studies provided evidence for answering the first question. In addition, the JAT study

allowed us to investigate how parents and professionals negotiate preferences for more behavioral or naturalistic procedures.

These approaches borrow from the extant literature establishing positive outcomes for language and vocabulary development after MTW (Girolametto, Sussman, & Weitzman, 2007; McConachie, Val Randle, Hammal, & LeCouteur, 2005) and increased bids and responses to establish joint attention after JAT (Jones, Carr, & Feeley, 2006; Kasari, Freeman, & Paparella, 2006; Kasari, Paparella, Freeman, & Jahromi, 2008; Kasari, Gulsrud, Wong, Kwon, & Locke, 2010; Schertz & Odom, 2007; Whalen & Schreibman, 2003). Although SLPs, other early interventionists, and psychologists can implement the treatment principles and strategies characteristic of the parent-training approaches reviewed (e.g., prelinguistic and enhanced milieu teaching, time delay, pivotal response training, discrete trial training), the focus in this article is on parents as interventionists. This is because we are committed to family engagement to foster competence in parent–child interaction and capitalize on a constant in the child's life—*the family*.

METHODS

"More than Words" pilot study

More than Words (MTW) is the Hanen Program for parents of children with ASD. It is designed to help families support the communication, vocabulary development, and social skills of their children with ASD (Sussman, 1999). This program evolved from child-centered or responsive interventions, building on a strong belief that language is typically learned in the contexts of playful and affectively positive interactions (Bloom, 1993). Parents learn that their children's ability to communicate depends on (1) being able to pay attention, (2) finding enjoyment in two-way communication, (3) imitating and understanding what others say and do, (4) interacting with people and having fun doing it, (5) practicing what they learn, and (6) having structure, repetition, and predictability in their life.

One controlled trial of training effectiveness using the MTW program to facilitate parents' understanding of ASD and their support of social communication in their young children with ASD showed that the approach had a measurable effect on parents' and children's communication skills (McConache et al., 2005). Another study by Girolametto et al. (2007) found similar results for three families of young children with ASD whose parents increased their use of responsive strategies with the children increasing their vocabulary.

Our MTW pilot study focused on optimizing parents' ability to interact in a facilitative way with their children with ASD using the MTW program to provide parent training. Similar to Girolametto et al. (2007), we examined changes in children's communication skills after participation in the MTW program. We also examined parents' perceptions of change in their own responsiveness and the value of the parent-training program.

Participants in the MTW study

Children and families were recruited from the 2009 Summer Autism Institute sponsored by the Autism Society of Vermont in collaboration with the University of Vermont's Department of Communication Sciences and Disorders. Four families, including both mothers and fathers, completed the training program in full and provided informed consent to use outcome data from the program for the purposes of teaching and research.

The four child participants ranged in age from 37 months to 69 months at the start of the study. All children received services in center-based programs through early essential education and received their usual related services, such as speech–language therapy or occupational therapy, within their early essential education programs or privately while participating in the MTW parent-training program.

Outcome measures in the MTW study

Changes in raw scores for *social*, *speech*, and *symbolic* communicative acts on the

Communication Symbolic Behavior Scale-Developmental Profile (CSBS-DP, Wetherby & Prizant, 2002) caregiver questionnaire and the examiners' CSBS-DP observations of the child from the pretraining to the posttraining administration were compared. In addition, the total number of words understood or produced on the MacArthur-Bates Communicative Development Inventories (MCDI): *Words and Gestures or Words and Sentences* (Fenson et al., 2006) was measured pre and posttraining.

For one child (P2), the number of words understood versus produced was utilized because of limited verbalizations. In addition, because one of the four children (P4) was at the "partner" stage (i.e., using conversational language) and had skills beyond those typically assessed by the CSBS-DP and the MCDI, data from these two measures were not collected for this child.

Parent responsiveness to MTW and the perceived value were also assessed using four interview questions: (1) What MTW strategies were most valuable? (2) How often did you use the suggested strategies since training ended? (3) Update us on your child's progress and did MTW make a difference? and, (4) Is there anything else you would like to share? In addition, an outside reviewer sent an MTW satisfaction survey to all four participating parents to assess their perceived value, challenges, and overall satisfaction as participants in the MTW parent-training program.

Training methods for MTW Study

The families first participated in an orientation session explaining the parent-training program. It was followed by eight training sessions (2.5 hours per session) in a classroom setting, led by two SLPs with American Speech–Language–Hearing Association and Hanen MTW certification.

Orientation session

All interested families attended a preprogram orientation session at the identified program site. Families received basic information about the Hanen program, MTW (Sussman,

1999), including a program overview. Pretraining home visits were scheduled as well. Parents were provided a general information form with questions regarding medical history, development, communication, socialization, and current concerns. A communication update form was also provided to document the child's current means of communication, social use of language, and language comprehension. Families also completed a video consent form.

Pretraining home visit

Pretraining assessments were completed using the outcome measurement tools to document the baseline levels of communication and vocabulary development of the children whose parents participated in the parent training. All met basic psychometric validity and reliability criteria. These included the Mullen Scales of Early Learning (MSEL; Mullen, 1995), CSBS-DP: *Test and Caregiver Questionnaire* (Wetherby & Prizant, 2002), and the MCDI: *Words and Gestures or Words and Sentences* (Fenson et al., 2006). All children were videotaped interacting with their parents during four activities: (1) a physical game without toys, (2) snack, (3) looking at a favorite book, and (4) playing with a favorite toy.

Parent-training sessions

After the pretraining home visit, parents participated in eight didactic and interactive training sessions. Sessions focused on teaching parents strategies to increase communication opportunities and interaction with their children. At the end of each session, families completed a "to-do-at-home plan" that involved utilizing the strategies presented during class and individualized to their child. Key strategies families learned included (a) OWL strategy: *O*bserve, *W*ait, *L*isten; (b) Four I's strategy: *I*nterests, *I*nterpret, *I*mitate, *I*ntrude; (c) ROCK strategy: *R*epeat, Offer *O*pportunities, *C*ue to take a turn, *K*eep it going or fun; and (d) Four S's strategy: *S*ay less, *S*tress, Go *S*low, *S*how (Sussman, 1999) (see Table 1).

Table 1. Definitions and examples of the key parent-training strategies in MTW (Sussman, 1999)

Strategy	Definition	Example
OWL		
Observe	Observe what interests the child.	Parent observes child picking up cars and says, "Let's play cars."
Wait	Provide enough wait time for the child to respond to questions.	Parent waits to see what the child does.
Listen	Listen to the child's communication attempts.	Parent listens to their child's communication.
Four Is		
Include	Include the child's interests and join in those interests.	Parent sees child is not interested in doing a puzzle but in playing with a ball. Parent turns this interest into a game rolling the ball back and forth.
Interpret	Interpret all communication attempts.	Parent interprets actions and labels what the child is doing in the game.
Imitate	Follow the child's lead by imitating what the child is doing or saying.	Parent imitates the child's actions.
Intrude	Intrude in solitary play to engage with the child.	Parent intrudes if the child disengages from this routine.
ROCK		
Repeat	Repeat what you say or do.	Parent says "tickle" each time they play a tickle game.
Opportunities	Provide opportunities for the child to communicate.	Child has the opportunity to request "tickle" verbally.
Cue	Provide cues to help the child to take his/her turn.	Parent provides wait time and verbal cues to help the child take a turn.
Keep it fun/going	Keep the interaction fun by being animated and keep the routine going.	Then the routine keeps going and the parent is lively and animated.
Four Ss		
Say less	Use simple, short language.	Parent is dressing child to go outside and says, "Shoes. Put on shoes" using few words.
Slow	Emphasize important words.	Parent says important words slowly with pausing.
Stress	Speak at a slow rate to encourage comprehension.	Parent stresses the word *shoes*.
Show	Use objects, actions, gestures, or pictures to increase comprehension.	Parent shows the child the shoes before putting them on his feet.

After parent-training sessions 2, 4, and 7, an interventionist completed three separate in-home videotaped sessions with oral and written feedback provided to the family members. Each videotaped session focused on the use of the key strategies parents learned in their didactic training sessions. The interventionist provided parents with verbal feedback, while watching the videotape of their interactions with their children. Plans were developed at the end of each videotaped session to incorporate strategies learned into new activities and daily routines in the home or community setting to facilitate generalization.

Posttraining home visit

After the last parent-training session, families were asked to focus on the use of the strategies learned (e.g., Four I's, ROCK, Four S's) for the 3–4 months during which no specific parent-training sessions occurred. A final home visit was scheduled approximately 3–4 months after the last parent-training session for each family. Standardized tests administered during the pretraining home visit were readministered to measure outcomes. Families participated in three different activities (i.e., looking at favorite books, playing with favorite toys, and partner games or routines) with their children, which the interventionists videotaped. Interventionists and families shared their observations about the progress made in the parents' ability to facilitate their children's communication and their children's observed progress. Families and interventionists collaboratively discussed next steps and ways to generalize the use of the MTW strategies to other activities. Families were asked to provide written feedback about their experiences with the parent-training program in response to probing questions.

Joint attention training pilot study

Joint Attention Training (JAT) is designed to address a core social impairment in young children with autism (Kasari, Freeman, & Paprelli, 2001; Kasari et al., 2010; Rocha et al., 2007; Schertz & Odom, 2007; Whalen

& Shreibman, 2003). Children with ASD generally communicate to regulate others' behavior, rather than to achieve social interaction or joint attention (Mundy & Burnette, 2005; Wetherby, 1986). The ability to jointly process another's actions or objects of attention as well as one's own appears to be critical to symbolic learning (Mundy, Sullivan, & Mastergeorge, 2009); therefore, intervention targeted to establish joint attention is likely to lead to positive play, language, and social outcomes (Bono, Daley, & Sigman, 2004; Landa, Holman, O'Neill, & Stuart, 2011; Sigman et al. 1999; Toth, Munson, Meltzoff, & Dawson, 2006). In this pilot study, two different theoretically driven approaches to JAT were employed: naturalistic behavior modification from the behaviorist tradition and relationship-based intervention from the social–interactionist tradition.

Naturalistic behavior modification including verbal and physical prompts, task choice, contingent reinforcement, and interspersal of mastered tasks have been used to facilitate joint attention in 4-year-olds but have yielded short-term gains with limited maintenance (Kasari et al., 2001; Whalen & Shreibman, 2003). Kasari et al. attributed the poor maintenance to insufficient parent engagement in the intervention and a lack of external motivations. This hypothesis was supported by research showing that, when parents were taught to initiate joint attention, prompt responses from their children, and respond contingently using both discrete trial training and pivotal response training, they have been successful in facilitating joint attention with their children and maintaining their joint attention initiations (Rocha et al., 2007). Recently, Kasari et al. (2010) found that short-term parent-mediated intervention (24 sessions) yielded significant improvements in response to JAT and functional play that were maintained 1 year postintervention.

Relationship-based intervention has also been used as a form of JAT, by contextualizing intervention within parent–child interactions through play and opportunities to establish affective connections and two-way

communication (Schertz & Odom, 2007). It emphasizes a mediated learning model in which interventionists collaborate with parents to brainstorm activities most likely to promote shared enjoyment and joint attention as they incorporate motivating toys and actions in play with their child.

Given evidence for success of both the Whalen and Shreibman (2003) and Schertz and Odom (2007) joint attention parent-training approaches, we trained interventionists to implement joint attention parent-training for young children with ASD using both methods. A questionnaire (see the Appendix) was developed to assess each family's style, preferences, routines, and desire for structured versus unstructured activities. Parents were asked to rate each item on a scale of 1 (*not at all true*) to 5 (*always true*). Parents also were asked five open-ended questions about how often they played with their child, what they hoped to gain from the parent training, any concerns they had about participating, any additional information they wished to share, and a listing of the child's 10 favorite toys.

We reviewed the answers to this questionnaire with the interventionists to guide them in their discussion with families about the JAT approach that would likely be most conducive to their individual style, preferences, daily routines, and level of structure desired. Those families who required more structured activities, felt less comfortable in play with their child and needed interventionist support to define activities, and set up play scenarios were guided to the naturalistic behavior modification approach to JAT (Whalen & Schreibman, 2003). In contrast, those families who preferred to interact with their child in an unstructured format, felt competent in play and interaction with their child, and managed difficult behaviors with ease were guided to the relationship-based approach to JAT (Schertz & Odom, 2007).

The goal of the JAT pilot study was to examine the interventionists' impressions of the effectiveness of the training they received to guide families in both selecting and implementing one of two evidence-based approaches to teaching joint attention in the home setting. Feedback from the interventionists about the effectiveness of their training and preparation for collaborating with families to select the most appropriate intervention approach for joint attention provided the primary outcome data for this pilot study.

Participants in the JAT study

The participants in this study were three parents of children with ASD and the three professionals working with the parents to help them learn skills to promote JAT. Specifically, professionals in speech–language pathology, early childhood, and special education became 'interventionists in training' because they were prepared to implement joint attention-based training with families of young children (2–3 years of age) with ASD. They included three master's prepared and credentialed community-based interventionists (two SLPs and one early childhood special educator). All consented to participate in the training.

The interventionists also participated in a three-credit graduate course in ASD taught by the first author. The course was designed to enhance the interventionists' understanding of autism, family-centered care, and cultural competence, current approaches to assessment of ASD, evidence-based interventions for children with ASD, collaborative approaches to program planning and service delivery, and inclusive practices.

Outcome measures in the JAT study

Interventionists' responses to interview questions assessing the strength of their training in and implementation of JAT, their perceived challenges in implementing JAT, recommended changes in the training they received, and the most powerful lesson learned served as the primary outcome measures. In addition, an outside reviewer sent a satisfaction survey to all three participating parents to assess their perceived value, challenges, and overall satisfaction as participants in the joint attention parent-training program.

Training methods for the two JAT approaches

Training was provided for the early interventionists in this approach in three phases. In the first phase, interventionist participants learned about two evidence-based procedures for establishing joint attention during parent–child interactions. In the second phase, they developed a family-centered community-based resource module and in-service training to prepare other interventionists to work with families around joint attention. In the third phase, outcomes of the training were identified and evaluated.

Training phase I

In the first phase of training, the interventionists were expected to accomplish both skills and activities to facilitate their engagement with families and provide the needed training so joint attention for the child with ASD could be achieved. First, they established competence in identifying bids for and responses to joint attention through video review and analysis with the authors. Second, they implemented a pre- and postintervention assessment of the child with ASD. Third, they selected one of two approaches to JAT on the basis of the results of a particular family's interview designed specifically for this study. Fourth, they completed a baseline assessment of joint attention during play with the parent and implemented the selected intervention using modeling and coaching with the family.

To establish competence in identifying and assessing joint attention, the interventionists participated in 10 hours of didactic training. To explore the feasibility of implementing one of the joint attention intervention procedures in the home, interventionists collaborated with families to complete a questionnaire that guided the intervention selection. The survey was designed to determine parental preferences for structured and prescribed activities (associated with the contemporary behavioral model; Whalen & Schreibman, 2003) versus more natural interaction patterns as well as toy preferences and child motivators (associated with the naturalistic developmental model; Shertz & Odom, 2007). The goal was for interventionists to learn how to help parents express their preferences so that an intervention match could be made (see the Appendix). To prepare for the parent interviews, the interventionists first learned about the two different procedures for teaching parents to work on joint attention skills with their children in their home and community.

The behaviorist procedure (Whalen & Schreibman, 2003) followed the tenets of pivotal response training: gaining the attention of the child; providing clear directions; incorporating child-led activities; offering multiple discriminators; interspersing maintenance and learning tasks; demonstrating turn-taking; ensuring immediate and natural reinforcement; and, reinforcing approximations of correct responses as well as correct responses (Koegel & Koegel, 2006; Koegel, Koegel, & Carter, 1998; Koegel, Koegel, Harrower, & Carter, 1999). Using motivating toys during 10- to 15-min interactions with their child, parents learning this approach were taught specific skills in weekly sessions using six phases to achieve joint attention: (1) hand on, (2) tap, (3) show, (4) eye contact, (5) point, and (6) eye gaze. The ultimate goal was to achieve a three-part joint attention exchange around an object or action of shared interest. Parents began at phase 1 after the interventionists' modeling and proceeded to the next phase once 80% success was achieved over three sessions.

The alternative procedure (Schertz & Odom, 2007) was built on the developmental precursors of joint attention and utilized the parent–child relationship to mediate child learning. Using four phases, interventionists met weekly with parents to teach them how to (1) focus on faces, (2) take turns, (3) respond to joint attention, and (4) initiate joint attention with their child with ASD during natural interactions with toys. The *Joint Attention Mediated Learning* manual (Schertz, 2005) was adapted to provide a structure

for parent–child interactions. Interventionists collaborated with parents in planning activities guided by the core principles in the training manual. Before working directly with parents and their children, interventionists were instructed on the purpose of each phase of intervention and were given suggestions to promote brainstorming with parents so they could develop their own activities on the basis of their child's preferences and their relationship with their child. This parent-professional partnership was central to this intervention. As in the first procedure, intervention occurred during parent–child interactions using motivating toys. Parents began at phase 1 and proceeded to the next phase once 80% success was achieved over three sessions.

Two families selected the Whalen and Schreibman (2003) behavior-modification approach and one family selected the Schertz and Odom (2007) relationship-based approach. For both intervention procedures, interventionists guided the three participants in the JAT study by completing the following seven steps:

1. Provided feedback on weekly videos the parents made to ensure intervention fidelity, paying specific attention to the skill that was the focus of the previous week, and offering observations regarding effective use of the skill and areas in need of refining.

2. Checked in with families regarding specific challenges encountered and engaged in problem-solving to address issues such as prompt use and fading, behaviors interfering with learning, and rate of progression. Interventionists received support to address these issues from the authors where a number of solutions were generated and interventionists communicated these options to the parents. Parents selected a solution in consultation with the interventionist.

3. Introduced new or discussed previous strategies related to the intervention— including setting up the environment. If there was evidence of difficulty with a

particular skill, it was reviewed to establish improved proficiency. If the parent had progressed with previous skills, the next step in the intervention progression was introduced. In addition, interventionists provided guidance on how to set up the physical and visual supports of the teaching session.

4. Modeled the technique with the child; how to initiate, prompt, and reward. Interventionists provided online commentary about the technique, potential barriers, and problem-solving solutions. They encouraged parents to ask questions and engage in a dialogue regarding the targeted skill.

5. Offered parents online feedback and prompting as needed. Parents had the opportunity to implement the skill under the interventionists' guidance. This format afforded the parents immediate feedback regarding their level of proficiency and areas of challenge in successfully implementing the skill. The interventionists were careful to provide immediate feedback that was constructive and encouraging to parents.

6. Videotaped parent–child interaction during each intervention phase to allow the parent to independently implement the skill and assess behavior change for the child and parent.

7. Supported parents to identify weekly treatment goals. Goals were typically related to the format of the intervention.

A summary of the procedures for both joint attention intervention approaches is presented in Table 2.

Interventionists were instructed to help parents identify opportunities for working on the treatment target outside the 10-min videotaped training sessions that occurred three times weekly. The intent was to build generalization of joint attention skills. Interventionists encouraged parents to document weekly successes and challenges to guide discussion during instructional sessions with the interventionist. Using a strengths-based approach, interventionists always started their

Table 2. Procedures for two approaches to joint attention intervention

	Contemporary Behavioral Approach (Whalen & Schreibman, 2003)	Naturalistic Developmental Approach (Schertz & Odom, 2007)
Week 1	Interventionists meet with families to complete pretests	Interventionists meet with families to complete pretests
Week 2	Interventionists introduce motivating toys to families for baseline	Interventionists introduce motivating toys to families for baseline
Week 3	Interventionists teach families phase 1 "hand on"	Interventionists teach parents phase 1 "focusing on faces"
Week 4	Interventionists meet with families and either continue with phase 1 or move to phase 2 "tap"	Interventionist meet with families and either continue with phase 1 or move to phase 2 "taking turns"
Week 5	Interventionists meet with families and either continue with phases 1 and 2, or move to phase 3 "show"	Interventionist meet with families and either continue with phases 1 and 2, or move to phase 3 "respond to joint attention"
Week 6	Interventionists meet with families and either continue with phases 1, 2, and 3, or move to phase 4 "eye contact"	Interventionist meet with families and either continue with phases 1, 2, and 3, or move to phase 4 "initiate joint attention"
Week 7	Interventionists meet with families and either continue with phases 1, 2, 3, and 4, or move to phase 5 "point"	Interventionist meet with families and continue with phases 1, 2, 3, or 4
Week 8	Interventionists meet with families and complete posttests	Interventionists meet with families and complete posttests

feedback with positive observations making specific comments on the parent's use of the target strategies. Only one technique was introduced and implemented at a time. For each technique, interventionists provided families with a rationale, described the critical elements of the technique, checked for understanding, role-played, modeled the technique with the child, and provided guided practice. Parents' feelings of insecurity and frustration were acknowledged. Interventionists learned to identify and support a role for the participating parents.

To ensure intervention fidelity among the participating interventionists in supporting the specific intervention, a practice implementation of both intervention approaches was videotaped with a typically developing child. This practice implementation was re-

viewed by the authors and feedback was provided. Interventionists had weekly contact with at least one of the authors throughout the intervention to ensure that each phase was being implemented as expected with parents who had selected each of the intervention procedures.

Training phase II

In phase II of the training, the interventionists received a 2-hour training to brainstorm the content and format for their development of a professional resource module on joint attention. They collaborated with parents and the authors to select video clips showing examples of joint attention and the intervention procedures they implemented with their families. They used the literature and their experience implementing the parent training to

create a dynamic in-service including a PowerPoint presentation.

Training phase III

In the final phase of training, the interventionists completed their professional resource module on joint attention and some participated in the development of an annotated bibliography on parent training, both of which were posted on the Vermont Interdisciplinary Leadership Education for Health Professionals Program's website: www.uvm.edu/~vtilehp/autism. The three interventionists were required to present their in-service on parent training in rural communities throughout the state to early interventionists who were delivering community-based services and working directly with parents. The goal was to increase the number of individuals who were well trained to implement joint attention using parents as partners. Interventionists identified community needs in parent training related to joint attention and then invited providers of young children with ASD and families to the in-service training.

RESULTS

Results of the MTW pilot study

The results of the MTW pilot study were measured in terms of changes in children's performance as described in the previous section on outcome measures. Test results for the CSBS-DP and the MCDI for three of the children (P1, P2, and P3) are listed in Table 3 and schematically presented in Figures 1–4.

Results indicated that all three children increased their use of social and symbolic communicative acts from pre- to posttraining. Notably, caregiver ratings and examiners' observational assessments of change were similar for all three children. Vocabulary change on the MCDI yielded similar positive results as well, with all three children increasing the number of words understood or produced from pre- to posttraining.

Data for the CSBS-DP and MCDI were not completed for one child (P4), because he was already at the "partner" (i.e., conversational) stage on the MTW profile and was highly verbal at the beginning of the study; therefore, these tools were insensitive to changes in his communicative ability. The pre- and posttraining MSEL scores for P4, however, did show notable improvement, although he performed in the average range at both points in time. The other three children scored in the very low range on the MSEL, which remained unchanged from pre- to posttraining.

Parent impressions about the usefulness of the parent-training program were gathered at the end of the 8-week training program and 3–4 months posttraining. Parent feedback was evaluated in two ways. First, a formal evaluation tool was completed and analyzed by an outside evaluator. Three of four families completed the evaluation requesting parent feedback on the program. Results indicated that parents perceived the videotape viewings, home visits, and evening didactic sessions to be the most beneficial aspects of their participation. Getting the homework assignments done was viewed as the most challenging aspect of their participation. Parents' expectations for involvement in the program were most often characterized as learning skills to increase their children's communication and play, and parents strongly agreed that their expectations were met. Parents strongly agreed that each of the MTW strategies (i.e., OWL, ROCK, 4 I's, and 4 S's) were effective for their children and they felt comfortable implementing these strategies in the home setting. They also strongly agreed that their participation in the MTW program positively affected their children's communication. Two families strongly agreed and one family agreed that their child's communication improved. All families were highly satisfied with the MTW training experience.

Two examples of testimonials reported to the outside evaluator are particularly noteworthy:

- "We have seen a dramatic improvement in our child's behavior and ability to cope with change, disappointment, and frustration."

Table 3. Description of child participants in the MTW parent-training program and pre- and posttraining performance

Child (Com.Stage)[a]	Age Pretraining	Age Posttraining	MSEL Pretraining	MSEL Posttraining	CSBS-DP Pretraining	CSBS-DP Posttraining	MCDI Pretraining	MCDI Posttraining
P1-Male (Requester)	37 months	44 months	SS = 55	SS = 51	**Caregiver** Social = 30 Speech = 36 Symbolic = 27 **Observed** Social = 22 Speech = 41 Symbolic = 9	**Caregiver** Social = 41 Speech = 38 Symbolic = 35 **Observed** Social = 32 Speech = 32 Symbolic = 34	Total Vocabulary Produced = 111	Total Vocabulary Produced = 195
P2-Female (Own agenda-Requester)	53 months	58 months	SS = 49	SS = 49	**Caregiver** Social = 27 Speech = 23 Symbolic = 18 **Observed** Social = 7 Speech = 16 Symbolic = 3	**Caregiver** Social = 35 Speech = 24 Symbolic = 30 **Observed** Social = 18 Speech = 15 Symbolic = 11	Total Vocabulary Produced = 51	Total Vocabulary Produced = 114
P3-Male (Own agenda-Requester)	65 months	72 months	SS = 49	SS = 49	**Caregiver** Social = 20 Speech = 2 Symbolic = 41 **Observed** Social = 10.67 Speech = 0 Symbolic = 0	**Caregiver** Social = 22 Speech = 9 Symbolic = 55 **Observed** Social = 19.67 Speech = 6 Symbolic = 5	Total Vocabulary Understood = 197	Total Vocabulary Understood = 265
P4-Male (Partner)	69 months	74 months	SS = 88	SS = 101	NA	NA	NA	NA

Note. CSBS-DP = Communication Symbolic Behavior Scale-Developmental Profile; MCDI = MacArthur-Bates Communication; Development Inventory; MSEL = Mullen Scales of Early Learning; SS = Standard score.

[a]Communication stage is one of the four stages as labeled in the MTW program (Sussman, 1999): Own agenda (preintentional communicator, limited understanding, and minimal interest in others), Requester (makes requests, understands names and routines with cues, and pays attention to familiar adults), Early communicator (makes requests with some social reason, understands words and some gestures and questions, and pays attention to communication partner and activity simultaneously), and Partner (requests, responds and comments with some difficulty in initiating, understands many words and sentences, and some play with children).
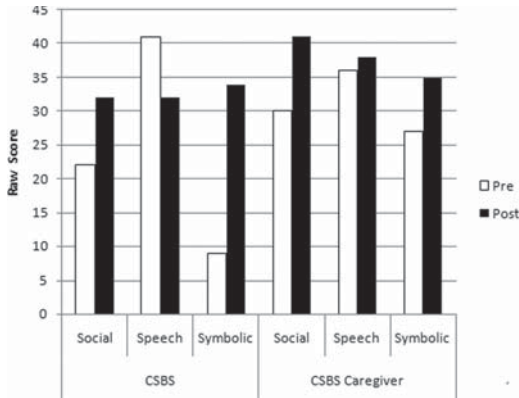
Figure 1. Raw scores on the CSBS-DP and the Caregiver Questionnaire for P1 pre- and posttraining.
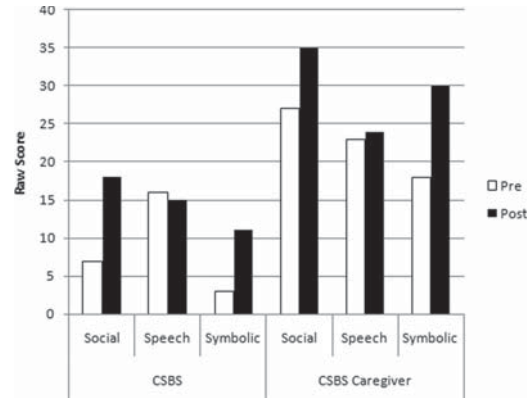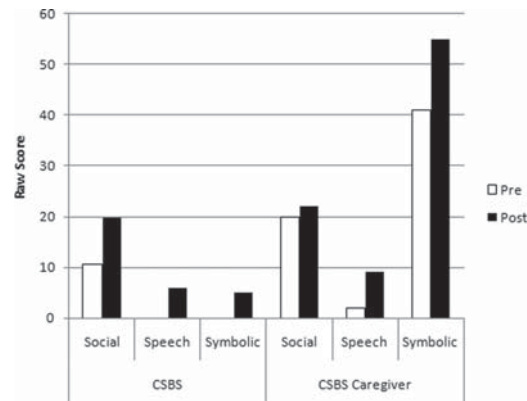

Figure 2. Raw scores on the CSBS-DP and the Caregiver Questionnaire for P2 pre- and posttraining.

- "More than Words and its strategies have allowed (P2) to start vocalizing his wants and needs. Since we started the class, (P2) has gone from a nonverbal 5$\frac{1}{2}$ year old to talking in a few months. We are so fortunate to be a part of this amazing program."

Second, families were asked to address four general questions to help the interventionists understand which of the strategies worked best, how often they were used, whether or not the strategy use made a difference for their child and an update on their child's progress, and anything else they wanted to share about the training program. Parental responses to the questions about the MTW program and requests for other input are provided in Table 4. They provide qualitative evidence of the parents' perceptions about the value of the program.

Results of the JAT pilot study

The available data to analyze parent and child bids for and responses to joint attention are limited as this was a pilot in the early stages of implementation and the emphasis was on interventionist training. Although parent impressions about the usefulness of the JAT were gathered via a satisfaction survey, only one of the three families completed the survey. Personal challenges that arose in the other two families (family breakup, illness) precluded them from completing the survey.

Figure 3. Raw scores on the CSBS-DP and the Caregiver Questionnaire for P3 pre- and posttraining.
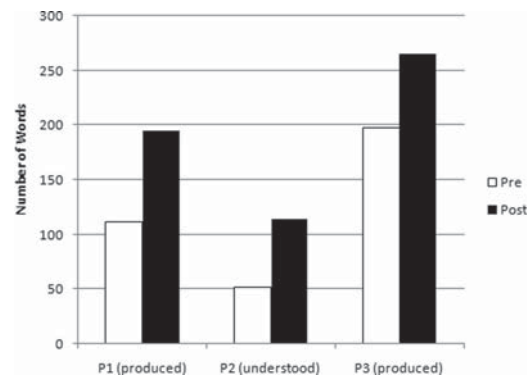
Figure 4. Words understood or produced on the MCDI pre- and posttraining for P1, P2, and P3.

Table 4. Selected parent responses to questions about value of MTW parent-training program

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What MTW strategies were most valuable?

P1 = >no specific response to this question.

P2 = >OWL, ROCK, the 4 S's, and visual helpers. The OWL strategy reminds us to get face to face with our daughter, and to follow her lead during activities. Often when we "wait" her out, communication will occur either verbally, with her go-talk, or with an approximation or point. We use ROCK in people games and in routines.... The 4 S strategy constantly reminds us to say less.... We have been using visual helpers as a tool to cue [child] as to what is expected next....

P3 = >ROCK; 4 I's; actually all of the strategies were useful; OWL because [child] is less verbal, it allowed us to say less and just listen to him and give him opportunities to communicate; 4 S's [husband] felt these were particularly helpful.

P4 = >ROCK: [mother] I feel like I have "Keeping it Fun," down, but sometimes that can get in the way.... through the video it was clear that in an attempt to steer toward a goal I had in mind I was hijacking the play and no longer observing well enough to truly follow [child's] lead. I know the part of ROCK that had the biggest effect on [husband's] learning was OPPORTUNITIES.. .

How often did you use the suggested strategies since training ended?

P1 = >no specific response to this question.

P2 = >The MTW strategies have become part of our lives. We use OWL daily during play, snack time, bath, etc. We definitely found ourselves face-to-face much more. We have noticed a difference in joint attention because we are making a more conscious effort to get on her level, literally!

P3 = >No specific response to this question although informal reports indicated strategies were used throughout their interactions.

P4 = >Every day, every hour. Both of us. I'm completely serious about this.

Update us on your child's progress and did MTW make a difference?

P1 = >We are happy to report that over these last few weeks [child] has pretty much stopped using his picture exchange communication system and is starting to verbalize everything!!! Really incorporating his brother in their play—used to be only mom and dad....

P2 = >She had a great summer; discovered the ocean—went over to a 3-year-old in the ocean and took her hand; initiated play on her own; can handle multiple transitions; ... had our first kid birthday party for [child]—smiled when they sang happy birthday; opened her presents for the first time....

P3 = >[child] starting to develop some self care awareness; goes to bed on his own and sleeps all night in his bed ...; doing well with toileting ... and dressing but needs some help;... extremely vocal; started PECs at school—gone through the first 3 stages; nodding yes and no ... [father] used to get frustrated before the program, and overwhelmed; the way he thinks has been revolutionized....

P4 = >MTW had a profound impact on [child]. Not only do both his parents have considerably more skills for communicating with him, which helps to head off meltdowns or deal with them if they happen but he's come so far. Here are three examples: (1) He's listening to chapter books! I see this as a direct result of taking this course. (2) He's playing board games! This is because I realized through [interventionist] coaching that I wasn't doing a good job of making sure that [child] knew the rules. Now that I'm a lot clearer with him ... he has experienced success with new games. (3) He's participating in play with his peers! We went to the pool this summer, and there were about eight other boys ... one of the boys started swimming closer to us ... then I started cueing his peer the way I learned to do with [interventionist] ... they started playing.

This course actually had a huge impact on our whole family. It wasn't until [husband] took this class that he truly understood how [child's] mind operates differently from his own. That understanding has been a watershed for us—we are now on the same page, so we're not struggling to understand each other's reasons for doing what we're doing, and we have a common language to talk about how to deal with problems as they present themselves. There's more harmony in our household as a result, and [child's] sibling is benefiting greatly from that!

(continues)

Table 4. Selected parent responses to questions about value of MTW parent-training program (*Continued*)

Is there anything else you would like to share?
P1 = >We have gained so much knowledge that we use everyday from this wonderful program.
P2 = >Must give to many families as possible—can help you create the environment at home that supports your child's development; helps you really be a part of the team because you now understand why your child does what they do; needs to happen really young.
P3 = >The process worked for us; great workshops; working together with other parents was really helpful; the experience of being with other families and seeing the variation of children on the spectrum and the changes observed was powerful; home visits were particularly helpful as were the homework assignments; we were taught strategies that helped us maximize the time with our children; schools help the children but no one really helps the parents engage with their children; the program helped to increase our self-worth.
P4 = >Yes. Taking this course as a couple was crucial . . . it was huge for me [mother] because I didn't have the burden of trying to teach it all to [husband] when I got home; . . . Simplify, simplify, simplify. That should be added to the S's. Another concept that really helped me that wasn't necessarily from the Hanen curriculum is the idea that children with autism often have trouble *initiating* things. The 4 S's, slow, say less, stress, and show are easy to remember, and provide a check for me not only in planning and carrying out activities with [child], but in pretty much every teaching experience I have. I was worried that because [child] was in the partner stage that we wouldn't fit into the class well. Not only did it work, it worked well. And it was so great for me—and unexpected—to see how far [child's] come. And I learned so much from the other parents.

The one family's results indicated that having someone model the intervention and provide the training in the home were most valuable, whereas making the videotapes of their interactions with their child was the most challenging. Caregivers were told that their involvement in the program could lead to their learning skills that could increase their child's attempts to communicate and play, and to see their child increase their communication and play skills. The family that completed the postevaluation agreed their expectations for the program were met and they were highly satisfied with the parent-training experience.

The perceptions of interventionists were the primary outcome variables in the JAT study. Interventionists' responses to questions described in the outcome measures' section are summarized in Table 5. Interventionists found the video review with families and the opportunity to troubleshoot how to respond as working well, but they were challenged with ensuring the fidelity of the intervention, particularly for Schertz and Odom's (2007) approach, as well as scheduling the intervention sessions. Interventionists' suggestion for change included more frequent and shorter intervention sessions over a longer period. They perceived the power of JAT to reside in the ability for families to see differences in joint attention and eye gaze in their children, to understand joint attention, and to teach it to others.

DISCUSSION

Answers to research questions

Two research questions guided the focus of these two pilot studies. The first question examined how family-centered care is incorporated into the process of helping families and early interventionists select and implement interventions that will address the priority outcomes for children with ASD using three parent-training approaches, MTW and two approaches to JAT. Outcomes of the MTW study were measured as changes in children's

Table 5. Interventionists' assessment of the value and challenges in implementing joint attention parent training

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What went well?

Family jumped right in and wanted to get as much information as possible; troubleshooting with the family member, reviewing what happened, and what was going to happen worked for the family.

Watching the videos together as part of the training was very helpful; [faculty] support provided was very helpful; parent really liked the intervention—she knew what her goal was and enjoyed this interaction; the child really enjoyed the toys—they were clearly motivating.

What was the greatest challenge?

Keep [matching] the fidelity of the intervention—following the steps versus free flow and going with what was happening; toys were great but did lose their interest near the end, so brainstormed other options; camera not working effectively.

Schertz model is more fluid, which is harder to do when you are used to a more behaviorally based model with clear discriminative stimuli—needed to have clearer operational definition; all the materials said "toddler" and child was a preschooler, so mom raised this; scheduling was a real problem.

Family was unable to maintain the program; wondering about feasibility; needed a fall back plan after a couple of visits if it is not working.

What would you change?

Split the toys among the weeks or determine how long intervention goes; keep most motivating toy at the end; letting family select a favorite toy to keep.

Shorter, more frequent training sessions . . . breaking up the content areas and spread throughout the year.

Make sure that the family is aware of what the commitment is for participating in the intervention—maybe create DVD with examples of joint attention; maybe do a video orientation of the project if we cannot have a group orientation.

What was the most powerful thing you learned through this experience?

I can duplicate this with my paraprofessionals and the training I can provide for those I work with.

Parent's reflection on "I know what I am looking for when I play with my child."

Looking at the videotapes—seeing the difference between joint attention and eye gaze with mom–child and clinician–child.

Coordinating how to be a communicator that is effective.

Getting a clear understanding of what joint attention is and what it really means.

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vocabulary development and social communication skills and as parents' perceptions of the value of their participation in the MTW training on a satisfaction survey and four follow-up interview questions. Outcomes of the JAT study were measured primarily as impressions on the part of interventionists about the effectiveness of their training to teach joint attention in collaboration with families although the parents' perceptions of the value of their participation in the JAT also were assessed on a satisfaction survey.

Findings for the MTW pilot confirmed previous research identifying positive change for children in their social interaction and vocab-ulary development when their parents are engaged and trained as language interventionists. Notably, the observed findings should be interpreted with caution as this was a pilot study without a control group and the results could be due to maturation. Parents also provided high ratings and positive comments regarding their perceived value in participating in the MTW training on both the satisfaction survey and the four interview questions. Findings for the JAT pilot indicated that interventionists' impressions after JAT also were positive for collaborating with families to implement intervention in the home setting. Only one of three parents returned the satisfaction

survey, so interpretation is guarded, but the available family response was positive.

The second question examined how SLPs and early interventionists collaborate with parents in selecting one of two approaches to teach joint attention. This question was most relevant to JAT as we attempted to determine how interventionists and families negotiate choices of intervention approaches that are based on competing theoretical perspectives (e.g., relationship-based vs. naturalistic behavior modification) using a parent questionnaire and dialogue with families. Outcomes were measured qualitatively via interviews with the interventionists regarding the value of providing intervention options for parents and engaging them in a dialogue to select the intervention approaches that best fit their needs and priorities. Interventionists specifically reported the value of giving parents' options for intervention approaches, commenting that the parent's choice might not always be the interventionist's choice but family "buy in" was critical to intervention success. Giving them the option to choose, with guidance about the expectations for training, kept families engaged. Overall, our preliminary findings suggest that professionals in multiple disciplines who journey with families along the intervention experience have a unique opportunity to enhance their competence as family-centered, culturally competent clinicians.

Lessons learned

Beyond answering the research questions, we learned several useful lessons in conducting these two pilot studies. From the MTW study, we learned from families that involvement of both parents in the didactic instruction was crucial. It allowed parents to share experiences and increase one another's understanding of the two parents' different approaches to supporting their children's communication, social interaction, and play. Families also shared the need to maintain connections with other parents, supporting the literature's assessment of the value of parent-to-parent matches (Shelton & Stepanek, 1994).

From the JAT study, we identified four primary lessons regarding our interactions with families and best methods for training early interventionists. First, we recognized the need to increase the level of family support to ensure that parents understood the training project and had expressed their commitment to remain engaged in the project. In reflecting on the JAT study, we realized that we failed to provide an orientation for families, as was done in the MTW program, and that may have made it more difficult to keep some families fully committed to the project. On the other hand, extraordinary family stresses (marital problems and family illness) may have contributed more to the lack of follow-through than the absence of orientation activities. Such individualized circumstances are also more likely to interfere with small pilot studies like these than with larger studies with more participants. In addition, we recognized that assigning 8 weeks to the intervention phase may not have allowed sufficient time for families to move through the individual training objectives, receive sufficient modeling and coaching from the interventionist, and achieve competences for supporting communication, social interaction, and play. Finally, we realized the importance of teaching interventionists flexible thinking and problem-solving strategies to implement when parent training is not going as expected. Such strategies should emphasize that following a specified procedure is less important than redefining the priority family goal when challenges are apparent.

Although the purpose of this article was not to compare MTW and JAT, families and their interventionist consultants often are faced with a dilemma on how to begin treatment. Decisions regarding the targets and approaches used for initial treatment for children with ASD are critical. This is because even short periods of time engaged in ineffective treatment is lost time that cannot be recovered. Both MTW and JAT have been found to lead to positive outcomes (Girolametto et al., 2007; National Autism Center, 2009). In addition, joint attention interventions have

been linked to collateral gains in social initiations, positive affect, imitation, play, and spontaneous speech (Whalen, Schreibman, & Ingersoll, 2006); and MTW has been linked to increases in vocabulary and social interaction (Girolametto et al., 2007; McConachie et al., 2005). The broader question then becomes: Which of these two interventions (MTW or JAT) will serve as the most appropriate starting point?

These two pilot studies were limited by their small sample sizes, short duration, and lack of control groups. These limitations place restrictions on our ability to generalize the results to the target populations of parents of children with ASD and the professionals who collaborate with parents to select and implement intervention approaches. Therefore, we remind readers of the pilot nature of these interventions.

It is important also to highlight that both the MTW and JAT interventions explicitly target a core deficit of ASD. They both work to increase a child's attention, social participation and enjoyment, and recognition of the significance of social and communicative partners. Therefore, either approach might be an appropriate initial intervention approach. Alternatively, both could be implemented together. However, a number of variables should be considered before making such a decision. The first consideration involves both the individual profile of the child and the preferences of parents. Individuals with autism can be expected to have unique presentations of the three core deficits: social, communication, and behavior (American Psychiatric Association, 2000). The selection of an intervention target and approach, such as MTW or JAT, constitutes a starting point closely after an initial diagnosis, but it also requires consultation with parents regarding their values and priorities. Therefore, it is important to begin with the most challenging area in the child's profile, which also is the area of greatest concern to the child's parents. For example, MTW may be the intervention of choice if spoken language is the most significant deficit and of greatest concern to the parents, whereas joint

attention could be selected as the initial target in the case of profound deficits in social pragmatics noted by parents as lack of interest in engagement. When discrepancies exist, the intervention priorities of the family should be given precedence, at least initially. This may increase the sense of parental empowerment, collaboration, and motivation as true members of the intervention team.

In addition, the limitations of the family and their support systems may influence intervention decision-making. The time commitments for MTW and for alternative approaches to JAT, separately and together, may dictate intervention choices and preferences of parents. The demands placed on families in terms of the direct training, implementation, and data collection (e.g., JAT has greater requirements for data collection), can provide insight into the most appropriate starting point.

Implications and future research

Our observations and parent reports suggest that parent training increases parents' confidence and enjoyment with their child. Having intervention options that are responsive to the individual family's culture, learning style, and home environment are crucial to program buy-in and successful implementation. The training frameworks that were part of both pilot projects provided a template for developing and implementing parent intervention across areas of communication, social interaction, and play.

These two pilot studies, although small, showed that SLPs and other early interventionists can partner with families to foster interactions with their young children with ASD by teaching them how to facilitate their child's ability to pay attention, engage their child in two-way communication, help their child imitate and understand what others say and do, show their child how to interact with people and have fun doing it, and practice what they learn using structure, repetition, and predictability (Sussman, 1999). Speech–language pathologists also can facilitate parents' understanding about what

communication is, choosing a learning style that best characterizes their child, and what function(s) their child's communication attempts serve. Our primary conclusion is that SLPs can use the MTW-training strategies not only to teach families but also to utilize in their own interventions with this population. The results related to choices based on different theoretical approaches to JAT are less clear because of the response attrition of two out of three families in the JAT pilot study, although all three interventionists described the value of giving families a choice. More research is needed to investigate child and family outcomes for the type of JAT selected.

Our next steps for studying family-based intervention will include an analysis of joint attention bids and responses that occur during parent–child interactions. Furthermore, in the JAT project we are now including a measure to examine maintenance, and we will be surveying interventionists to determine what, if any, strategies they have learned through the training that they will continue to use in their interactions with families. Ultimately, we hope to model partnerships with families in the intervention decision-making process and invite them to participate in ongoing research examining best practice in caregiver service delivery.

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Appendix 1. Parent Questionnaire: Preparing for Parent Training

PARENT NAME: _____ CHILD'S NAME: _____
DATE: _____ INTERVIEWER: _____
Use the following rating scale to respond & circle the number that most represents how you feel
   about the item:

	Not at all true	Rarely true	Sometimes true	Mostly true	Always true
	1	2	3	4	5
a.	I prefer interacting with my child in a structured play format				
	1	2	3	4	5
b.	I tend to be organized				
	1	2	3	4	5
c.	I prefer to see progress being made through data collection				
	1	2	3	4	5
d.	I tend to be unorganized				
	1	2	3	4	5
e.	I feel relaxed when interacting with my child				
	1	2	3	4	5
f.	When there is difficulty communicating with my child, it is most likely because I missed an opportunity				
	1	2	3	4	5
g.	I usually go with what naturally happens during the day rather than follow a set routine				
	1	2	3	4	5
h.	I typically play with my child at a table or desk				
	1	2	3	4	5
i.	I have consistent household routines that I follow most days				
	1	2	3	4	5
j.	I prefer having a script to work with when engaging in activities with my child				
	1	2	3	4	5
k.	When there is difficulty communicating with my child, it is most likely because my child struggles to form connections				
	1	2	3	4	5
l.	I like making my own decisions about the play materials I will use with my child				
	1	2	3	4	5
m.	I prefer to feel or have a sense of progress being made				
	1	2	3	4	5
n.	When I try something with my child that doesn't work, I generally go back and try to figure out what went wrong				
	1	2	3	4	5
o.	I find it difficult to provide interaction opportunities throughout the day for my child				
	1	2	3	4	5
p.	I prefer to interact with my child in an unstructured free play format				
	1	2	3	4	5
q.	I have many ideas for ways to manage my child's difficult behaviors				
	1	2	3	4	5
r.	I am usually caught by surprise when my child has a difficult time				
	1	2	3	4	5
s.	I am uncomfortable managing my child's difficult behaviors				
	1	2	3	4	5
t.	I prefer to improvise when engaging in an activity with my child				
	1	2	3	4	5

(continues)

Appendix 1. Parent Questionnaire: Preparing for Parent Training (*Continued*)

u.	When I try something with my child that doesn't work, I generally move to another strategy				
	1	2	3	4	5
v.	I usually help my child through difficult times by talking through it				
	1	2	3	4	5
w.	I typically play with my child on the floor				
	1	2	3	4	5
x.	I can usually forecast when my child is going to have a difficult time				
	1	2	3	4	5
y.	I typically wait for my child to approach me before playing				
	1	2	3	4	5
z.	I feel anxiety or stress when interacting with my child				
	1	2	3	4	5
aa.	I typically approach my child to play				
	1	2	3	4	5
bb.	I like to incorporate my child's preferred tasks and interests into play				
	1	2	3	4	5
cc.	I feel as competent as I would expect when playing or interacting with my child				
	1	2	3	4	5
dd.	I am comfortable managing my child's difficult behaviors				
	1	2	3	4	5
ee.	I prefer trying a new intervention with my child independently				
	1	2	3	4	5
ff.	I find it easy to provide interaction opportunities throughout the day for my child				
	1	2	3	4	5
gg.	I feel less competent than I would like in playing or interacting with my child				
	1	2	3	4	5
hh.	I struggle to find ways to manage my child's difficult behaviors				
	1	2	3	4	5
ii.	I prefer outside support when trying a new intervention with my child				
	1	2	3	4	5
jj.	I usually rely on visual supports or physical touch to help my child through a difficult time.				
	1	2	3	4	5

2. About how often do you play with your child each day? _____

3. What are you hoping to gain from participating in this parent training? _____

4. Do you have any worries or concerns about participating in the parent training?_____

5. Is there anything else you would like to share with me about your child? _____

6. Tell me about your child's 10 favorite toys: _____