Bringing ABA into Early Childhood Routines to Meet the Needs of Young Children with ASD

Debra Leach, Ed.D.
Winthrop University

Abstract

It is well documented that applied behavior analysis (ABA) approaches to intervention for young children with ASD have a strong evidence-base. Although federal special education law mandates that early intervention services and supports be implemented within the natural environment to the maximum extent appropriate, many young children with ASD still receive ABA interventions in clinical and therapeutic settings and contexts. This article discusses the value of using ABA interventions with the contexts of everyday home, school, and community routines with young children with ASD through the use of routines-based interventions (RBI) and provides guidelines for doing so.

Bringing ABA into Early Childhood Routines to Meet the Needs of Young Children with ASD

It is well documented that young children with autism spectrum disorder (ASD) require early intensive behavioral intervention to address their core deficits and to enhance their development. Applied behavior analysis (ABA) teaching approaches with young children with ASD have a great deal of empirical support. The two approaches with the greatest evidence base include discrete trial training (DTT) and pivotal response treatment (PRT). See Table 1 for an overview of these ABA approaches.

Table 1
Overview of DTT and PRT

ABA Approach	Brief Description	Evidence-Base http://autismpdc.fpg.unc.edu/content/briefs	Seminal Studies with Young Children with Autism
Discrete Trial Training (DTT)	A one-on-one, teacher directed, systematic instructional approach that utilizes repeated trials of the A-B-C teaching sequence (antecedent-behavior-consequence). Prompts are delivered to ensure successful responses and	Most effective for children ages 2-9 for promoting the development of communication/language, adaptive behavior, cognitive/academic skills, social and play skills, and for reducing interfering behaviors.	(Lovaas, 1987); (McEachin, Smith, & Lovaas, 1993)

	systematically faded out.		
Pivotal Response Training (PRT)	PRT builds on learner initiations and interests and targets four pivotal behaviors: motivation, responding to multiple cues, self-management, and self-initiations. PRT is often implemented in natural settings and involve following the child's lead, provided the child with choices, using natural reinforcement, and accepting varied responses.	Most effective with children ages 2-16 for developing communication, language, play, and social behaviors.	(Koegel, Dyer, & Bell, 1987); (Koegel, Koegel, Surrat, 1992)

Although there is a great deal of evidence to support the use of ABA interventions with young children with ASD, practitioners face challenges with systematically planning these interventions so they can be implemented within the natural environment during the child's everyday routines. Federal special education law mandates that early intervention services and supports be implemented in the natural environment to the maximum extent appropriate (IDEA, 2004). Natural environments include settings, routines, and activities that are natural or normal for the child's same-age peers who do not have disabilities. Examples of natural environments include: 1) care-taking routines such as dressing, bathing, eating, and grooming, 2) community-based settings such as parks, playgrounds, beaches, libraries, movie theaters, and shops, and 3) play routines such as blocks, puzzles, pretend play, arts and crafts, and physical play. While the natural environment mandate has been in place since 1997, in many cases, young children with ASD still receive early intervention ABA services using a DTT approach outside the contexts of natural environments, either in clinical settings or within home-based ABA programs that are not implemented within everyday routines and activities. Although PRT is designed for implementation in the natural environment, procedures for assessing everyday routines and activities to develop routines-based ABA interventions based on caregiver priorities are not included in the PRT literature (Koegel & Koegel, 2006).

While research shows positive outcomes of caregiver-implemented routines-based interventions for young children with disabilities (Campbell & Sawyer, 2007; Dunst, Bruder,Trivette, Raab, & McLean, 2001; Woods & Kashinath, 2007), there are few studies focused on using ABA interventions in the natural environment to provide the intensive interventions that young children with ASD often require. In their 2006 study with five young children with autism and their caregivers, Kashinath, Woods, & Goldstein demonstrated that caregivers can be trained to successfully implement behavioral teaching strategies (ex. time delay, environmental arrangements, and natural reinforcement) within the child's everyday routines and activities. However, there are no studies to date that examined the use of using routines-based assessments and parent priorities to plan and implement intensive ABA interventions within the everyday

routines and activities of young children with ASD. Practitioners need more literature with specific guidelines for planning comprehensive ABA intervention programs that will be implemented in the natural environment and are driven by ecological assessments of everyday routines and activities and the priorities of caregivers. This paper discusses methods for designing and implementing intensive ABA interventions for young children with ASD within the natural environment using a Routines-Based Intervention (RBI) approach.

Routines-Based Intervention (RBI)

Leaders in the field of early intervention advocate for the use of natural environment interventions when supporting young children with disabilities as a response to research indicating that everyday family and community routines and activities provide young children with an optimal variety of learning opportunities (Dunst, Hamby, Trivette, Raab, & Bruder, 2000). One approach to providing early intervention services and supports in the natural environment is RBI. Recently, Robin McWilliam published a book that provides guidelines for effectively implementing RBI including assessment, goal setting, and intervention procedures (McWilliam, 2010). He discusses how to assess the everyday routines and activities of children and families to then plan systematic interventions throughout the child's day to take advantage of the multiple learning opportunities available within the contexts of everyday home, school, and community routines. Within this framework, children receive intervention in meaningful contexts focusing on developing skills needed to thrive in real world settings. This results in higher levels of motivation and generalization of learned skills than when children receive therapy in clinical settings or outside the context of everyday routines. It also empowers caregivers to be confident and competent in meeting the development needs of their children, which is the main purpose of early intervention services. The role of early intervention providers must be to provide coaching and modeling to caregivers to equip them with strategies and techniques they can use every day to help their children learn during naturally occurring routines and activities.

RBI and ASD

Because ABA interventions have been widely used for young children with ASD since the 1990's, practitioners may not consider the use of RBI for these children. They may not recognize that ABA interventions can actually have more impact if they are implemented within an RBI framework. Children with ASD often have difficulties with motivation and generalization when receiving interventions such as DTT outside of the contexts of everyday routines (Lovaas, 1977; Spradlin & Siegel, 1982). For that reason alone, it would be worthwhile to consider implementing ABA interventions within everyday routines and activities that are potentially more motivating than therapeutic contexts and are likely to enhance generalization since the children learn new skills within the actual contexts they will use them.   The main differences between RBI for young children without ASD and those with ASD is that children with ASD often need more intensive interventions planned. According to the Nation Research Council (2001), children with ASD need at least 25 hours per week of intensive interventions. These students require specific interventions related to their social communication deficits in addition to addressing other developmental domains, and they often require the use of ABA

teaching procedures to fully benefit from the interventions implemented within their everyday routines and activities.

Merging RBI and ABA

Merging RBI and ABA can be quite challenging for practitioners especially if they do not have specific guidelines to follow. Step-by-step procedures for conducting assessments, setting goals, designing and implementing interventions, and monitoring progress are provided as structure interventionists can use when merging RBI and ABA to meet the needs of young children with ASD. Each procedure will be illustrated using the following vignette as a reference:

Vignette: *Jacob is a three-year-old boy who lives with both of his parents and his five-year-old sister. He attends a community preschool three mornings each week. Jacob was diagnosed with autism just before he turned two years old. He enjoys puzzles, playing with toy trains, swinging, being tickled, having people chase him, and looking through books. He has strengths in verbal imitation, letter and number identification, and following simple directions. Jacob's parents indicate they would like to see Jacob more socially engaged with the family throughout the day, using more expressive communication, and playing appropriately with a variety of toys independently. A systematic approach of merging RBI and ABA will be used to design a comprehensive intervention program to address the parents' priorities and improve learning outcomes for Jacob.*

Conduct Assessments
A variety of assessments should be conducted to gather as much information as possible so that developmentally appropriate and meaningful goals can be set. First, the strengths and interests of the child should be assessed so that a strengths and interests based approach can be used when planning interventions. When providing interventions in the natural environment, a strong emphasis should be placed on tapping into the child's interests to increase active participation in everyday activities (Dunst, Trivette, & Masiello, 2011). By definition, children with ASD have a restricted range of interests (APA, 2000). Therefore, it is important to use the interests they do have to motivate them to engage in everyday routines and learning activities and to expand on their current interests to increase their repertoire of preferred topics and activities. Questions that can be asked of caregivers related to a child's strengths and interests might include: (a) What makes your child happy? (b) What about your child makes you proud? (c) What are your child's favorite times of the day? (d) What are some things your child would not want to live without? (e) How does your child prefer to spend his/her time? (f) Who does your child prefer to spend time with and why? (Leach, 2012). As you read in Jacob's vignette, he has many strengths and interests that can be accessed and built upon when designing and implementing ABA interventions during everyday routines. For example, since he has strengths in verbal imitation, his family can work on getting him more socially engaged by having him imitate words and phrases during the bath time routine. His family can join him when he is looking through his books and work on building his expressive communication skills by teaching him how to respond to comments about the pictures on the page and initiate his own comments to share his enjoyment with others.

Since the purpose of RBI is to implement interventions within ongoing home, school, and community routines, practitioners must determine which routines occur often enough to allow for consistent intervention each day. Once routines are selected for intervention, ecological assessments of the routines can be conducted. Ecological assessments provide information about how the environment may influence a child's performance and information about skills that are needed within certain contexts (Haney & Cavallaro, 1996; Wolery, 2002). It is important to assess any problem behaviors that are occurring and the child's independence, use of communication skills, and levels of social interaction within the routines to determine skills to target when setting goals. Table 2 shows an ecological assessment of Jacob's participation during mealtimes with his family. Table 3 shows an ecological assessment of Jacob's participation in read aloud at preschool. The format was adapted from the book *Bringing ABA to Home, School, and Play for Young Children with Autism Spectrum Disorders* (Leach, 2012).

Table 2
Ecological Assessment of Jacob's Participation in Mealtime

Question	Mother's Response
What does the mealtime routine typically look like?	*When it is time to come to the table, I will say, "It's time to eat." I then have to tell Jacob to go get in his chair. He is able to get in his booster seat by himself. During dinner, Jacob doesn't engage much with the rest of the family. My four-year-old daughter likes to play games such as twenty questions at the dinner table, and we often play games and talk to her. Jacob will eat his food independently. If he wants more, he will usually cry. I will ask him if he wants specific items. When I ask about the item he wants, he will stop crying. That is how I know what to give him more of. When he is finished eating, he will whine until I let him down. I have to help him out of his chair because he cannot undo the buckle on the booster seat.*
How does Jacob communicate during the routine?	*He whines or cries to let us know he wants something. If I hold up two things, he will reach for what he wants. Jacob will imitate words and phrases such as, "all done," "more chicken," and "apple juice."*
How does Jacob socially engage with others during the routine?	*Sometimes he will laugh when my daughter is laughing. Other than that, he doesn't engage much with others at the table at all.*
What can Jacob do independently during the routine?	*He can finger feed himself. He can drink out of a sippy cup. He can get into his booster seat by himself. He can get out of his seat after I unbuckle him.*

Does Jacob engage in any challenging behaviors during the routine?	*He cries to get more food or more juice and to get out of his seat. He only sits at the table for approximately ten minutes. Once I let him down, it disrupts the rest of the meal for everyone else because I cannot leave Jacob unattended.*

Table 3
Ecological Assessment of Jacob's Participation in Read Aloud at Preschool

Question	Teacher's Response
What does the read aloud routine typically look like?	*I call the children to the carpet for read aloud. Jacob needs to be brought to the carpet. When I read the story, I will often stop and ask the children questions. Jacob is unable to answer any questions and often attempts to leave the carpet area. Sometimes he is redirected easily, other times he has a tantrum.*
How does Jacob communicate during the routine?	*Jacob will point to pictures in the book if I ask a simple question such as, "Where is the dog?" and provide physical prompts.*
How does Jacob socially engage with others during the routine?	*Sometimes Jacob will imitate what a peer says. Sometimes he will imitate gestures with the whole that go along with the story.*
What can Jacob do independently during the routine?	*He can sit independently for about a minute before he wants to leave the carpet.*
Does Jacob engage in any challenging behaviors during the routine?	*He will continually try to leave the carpet area, and may have a tantrum when we try to redirect him back to the carpet.*

Set ABA Goals

Based on the assessment information gathered, practitioners can collaborate with caregivers to set meaningful goals for ABA interventions. After the ecological assessments are conducted for the routines that will be targeted for intervention, the interventionist can determine caregiver priorities for each routine. Sample questions that can be used to determine priorities include:
1. What communication skills would you like your child/student to learn during the routine?
2. What social interaction skills would you like your child/student to learn during the routine?
3. In what ways would you like to see your child/student become more independent during the routine?

4. What positive behaviors would you like your child/student to display during the routine?

Once the caregiver priorities are assessed, goals for ABA interventions for each targeted routine should be set. These goals should be observable, measurable, developmentally appropriate, positively stated, and include criteria for mastery. With ABA interventions, data are collected regularly to monitor progress. Thus, the goals should be short term to allow for immediate progress as result of intensive ABA interventions. Table 4 shows the caregiver priorities for Jacob for the two routines assessed with ABA goals linked to those priorities. Caregivers may choose to work on only one goal at a time or choose to work on several goals during each routine.

Table 4
Caregiver Priorities and ABA Goals

Caregiver Priorities	ABA Goals
Mealtime (Home) Ask for more food or drink using words instead of crying. Point to pick what he wants to eat or drink when given a choice. Play games with the rest of the family during mealtimes. Stay at the dinner table until everyone is finished.	1. When given a choice of two items, Jacob will point to the item he wants independently for five consecutive meals. 2. When Jacob wants more food or drink, he will say "more" independently for five consecutive meals. 3. When playing 20 questions, Jacob's sister will use pictures to select items. Jacob will imitate his sister at least 80% of the time when she says the item on the picture after someone guesses it or runs out of questions. 4. When Jacob is finished eating, he will stay in his seat and choose an interest-based activity (ex. puzzle, read a book, play with trains) to engage in while he waits for everyone to be finished for five consecutive meals.
Read Aloud (School) Sit for longer periods during read aloud. Participate by pointing to pictures, naming items in the book, and regularly imitating gestures and actions during the read aloud activity.	1. When given a copy of the book the teacher is reading, Jacob will sit on the carpet and follow along with the teacher for at least half of the read aloud activity for five consecutive school days. 2. Jacob will imitate at least 80% of gestures and actions during read aloud activities for five consecutive school days. 3. Jacob will answer simple questions such as "What is this?" "Who do you see?" when the teacher points to the picture in the book at least three times during each read aloud activity for five consecutive school days.

Develop ABA Interventions
Once goals are set, ABA interventions are then developed using a variety of behavioral teaching strategies. The procedures are written down in a step-by-step fashion to provide clear directions for all caregivers who will be implementing the interventions with the child. Interventions usually combine a variety of strategies including, but not limited to, positive reinforcement, following the child's lead (Koegel, Koegel, Harrower, & Carter, 1999), time delay (Halle, Marshall, & Spradlin, 1979, Ledford, Gast, Luscre, & Ayres, 2008; Liber, Frea, & Symon, 2008;

Snell & Gast, 1981), embedded discrete trials (Lovass, 1987; McBride & Schwartz, 2003; Whalen & Schreibman, 2003), shaping (Cooper, Heron, & Heward, 2007), prompting/fading procedures (Taylor & Harris, 1995; Wolery & Gast, 1984), peer-mediated interventions (Garfinkle & Schwartz, 2002; Pierce & Schreibman, 1997), and task analysis/chaining (Shrestha, 2013; Spooner, 1984). Table 5 shows an example of an ABA intervention for one of the goals for Jacob's mealtime routine. Table 6 shows an example of an ABA intervention for one of the goals for the read aloud routine at school.

Table 5
ABA Intervention for Mealtime Routine

Goal: When given a choice of two items, Jacob will point to the item he wants independently for five consecutive meals.

Teaching Procedures:
1. Present two food or drink items of holding them at eye-level while you're face-to-face with Jacob. Say something such as "Which one do you want?" or "Pick one." Make sure you don't say the same thing every time or Jacob may get dependent on that as a prompt. Sometimes you may not need to say anything because holding up two items is an indicator that he can choose one.
2. If Jacob points to a desired item, provide positive reinforcement by giving him the item selected.
3. If Jacob does not point to any item, restate the request and use time-delay (wait with an expectant look).
4. If still no response, use the following least-to-most prompts hierarchy (with each opportunity, begin with the least intrusive prompt you think Jacob needs and increase prompting if needed):
    a. Restate the request and push both items closer to encourage Jacob to point to one.
    b. Restate the request and move one item forward that you think the child would want and the other item back.
    c. Use modeling/request imitation by pointing to an item and then encourage Jacob to do the same.
    d. Use gentle physical guidance (i.e. tap Jacob's hand, gentle move his hand, lightly form his hand into a point).
5. Provide positive reinforcement even if Jacob responded with a prompt(s).

Table 6
ABA Intervention for Read Aloud Routine

Goal: When given a copy of the book the teacher is reading, Jacob will sit on the carpet and follow along with the teacher for at least half of the read aloud activity for five consecutive school days.
Teaching Procedures: 6. To increase the Jacob's motivation to sit during read aloud, allow him to choose the book that is going to be read before the other children are called to the carpet. Once the book is chosen, give a copy to Jacob and then ask him to go to the carpet.

7. Use peer-mediated interventions by selecting a few peers who can learn how to share Jacob's copy of the book during the read aloud and help Jacob stay on the correct page. This training should be done separate from read aloud so Jacob learns to share the book with a peer without causing disruption to the read aloud activity. Each day, select a different trained peer to sit with Jacob during read aloud. The peers can learn strategies such as:
   a. Pointing to the words as the teacher reads to keep Jacob on the correct page.
   b. Providing quiet verbal prompts such as "turn the page," or "don't turn yet."
   c. Using positive reinforcement by smiling at Jacob and whispering positive comments when Jacob remains seated and stays on the correct page.
8. If Jacob does not respond well to the peers, you can leave out step 2 and simply have Jacob sit independently with a copy of the book. He may go ahead in the book and not follow along with the teacher in that case. Allow him to do so to prevent frustration and tantrum behaviors.
9. The teacher should deliver positive reinforcement to Jacob throughout the read aloud activity if he remains seated with his copy of the book.
10. Use shaping by gradually increasing the amount of time Jacob is expected to sit during read aloud. If he tries to leave the circle before the time expected, positively redirect using gestures, picture cures, or gentle physical assistance if necessary. If he is unable to be positively redirected, remove him from the group and slightly decrease the time expected for him to sit during the next read aloud. If he is able to sit for the time expected, slightly increase the expectation the next time.

Implement Interventions

Before caregivers can be expected to successfully implement the interventions, they must receive training explaining all of the teaching procedures. This should include having the caregivers role-play the interventions receiving immediate feedback from the practitioner. There should be opportunities for modeling and ongoing coaching until caregivers are consistently able to implement the interventions successfully with fidelity. Video-stimulated recall can be used during the coaching phases. Caregivers videotape themselves implementing interventions. At a later time or day, the caregivers watch the videos with the practitioner to point out what they are doing well and what they can improve upon, and they receive additional suggestions from the practitioner (Leach & LaRocque, 2011).

Monitor Progress

Ideally, data are collected on a daily basis to monitor the child's progress when implementing ABA interventions. This may sound unrealistic for caregivers to do, but if the data collection procedures are easy to use, this can be possible. Caregivers can be trained to use level of independence data in which they simply record how much prompting the child needed to perform the skill on average throughout the day. They can also use yes/no data in which they indicate whether or not the child performed the skill independently that day. Other data collection methods caregivers may be able to use include frequency data and percentage data

when possible. Practitioners should review data weekly or bi-weekly to determine when goals have been mastered and to respond to any lack of progress and make changes accordingly.

Conclusion

This article provides a framework that early intervention providers can customize for the children and families they work with when designing and implementing ABA interventions in the natural environment. It is imperative that we increase opportunities for young children with ASD to be fully included across home, school, and community contexts to improve their quality of life and to enhance their development. Merging ABA interventions and RBI provides a way for children to receive the intensive interventions they need without missing out on the learning opportunities that are available within the natural contexts of everyday routines. This also has potential to increase the motivation of young children with ASD to learn and engage with others by providing intervention within routines in which they are comfortable and by tapping into their strengths and interests when teaching new skills. Most importantly, generalization will not be nearly as difficult for young children with ASD if they are learning meaningful skills within the contexts they will regularly use them.

References

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

Campbell, P. H., & Sawyer, L. B. (2007). Supporting learning opportunities in natural settings through participation-based services. *Journal of Early Intervention 29*(4), 287-305.

Cooper, J.O., Heron, T. E., & Heward,W. L. (2007). *Applied behavior analysis*. Englewood Cliffs, NJ: Prentice Hall.

Dunst, C. J., Bruder, M. B., Trivette, C. M., Raab, M., & McLean M. (2001). Natural learning opportunities for infants, toddlers, and preschoolers. *Young Exceptional Children, 4*(3), 18-25.

Dunst, C. J., Hamby, D., Trivette, C. M., Raab, M., & Bruder, M. B. (2000). Everyday family and community life and children's naturally occurring learning   opportunities. *Journal of Early Intervention, 23,* 151-164.

Dunst, C. J., Trivette, C. M., & Masiello, T. (2011). Exploratory investigation of the effects of interest-based learning on the development of young children with autism. *Autism: The International Journal Of Research & Practice, 15*(3), 295-305.

Garfinkle, A. N., & Schwartz, I. S. (2002). Peer imitation: Increasing social interactions in children with autism and other developmental disabilities in inclusive preschool classrooms. *Topics in Early Childhood Special Education, 22*(1), 26-38.

Halle, J. W., Marshall, A. M., & Spradlin, J. E. (1979). Time delay: A technique to increase language use and facilitate generalization in retarded children. *Journal of Applied Behavior Analysis*, *14*, 389-409.

Haney, M., & Cavallaro, C. C. (1996). Using ecological assessment in daily program planning for children with disabilities in typical preschool settings. *Topics in Early Childhood Special Education, 16,* 66-81.

Kashinath S., Woods J., Goldstein H. (2006). Enhancing generalized teaching strategy

use in daily routines by parents of children with autism. *Journal of Speech, Language & Hearing Research*, *49*(3), 466-485.

Koegel, R. L., Dyer, K., & Bell, L. K. (1987). The influence of child preferred activities on autistic children's speech behavior. *Journal of Applied Behavioral Analysis, 20,* 243-252.

Koegel, R. L., & Koegel, L. K. (2006). *Pivotal response treatments for autism: Communication, social, & academic development.* Baltimore, MD: Brookes.

Koegel, R. L., Koegel, L. K. , Surrat, A. (1992). Language intervention and disruptive behavior in preschool children with autism. *Journal of Autism and Developmental disorders, 22*(2), 141-153

Koegel, L. K., Koegel, R. L., Harrower, J. K., & Carter, C. M. (1999). Pivotal Response Intervention I: Overview of approach. *Journal of Applied Behavior Analysis, 25,* 341-354.

Leach, D. (2012). *Bringing ABA to home, school, and play for young children with autism spectrum disorders and other disabilities*. Baltimore, MD: Brookes.

Leach, D., & LaRocque, M. (2011). Increasing social reciprocity of young children with autism. *Intervention in School and Clinic, 46,* 150-156.

Ledford, J. R., Gast, D. L., Luscre, D., & Ayres, K. M. (2008). Observational and incidental learning by children with autism during small group instruction. *Journal of Autism and Developmental Disorders, 38*, 86-103.

Liber, D. B., Frea, W. D., & Symon, J. B. G. (2008). Using time delay to improve social play skills with peers for children with autism. *Journal of Autism and Developmental Disorders, 38*, 312-323.

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

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

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

McEachin, J. J., Smith, T., & Lovaas, O. I. (1993). Long-term outcomes for children with autism who received early intensive behavioral treatment. *American Journal on Mental Retardation, 97*(4), 359-372.

McWilliam, R. A. (2010). *Routines-based early intervention: supporting young children and their families.* Baltimore, MD: Brookes.

National Research Council, Committee on Educational Interventions for Children with Autism. (2001). *Educating children with autism.* Washington, DC: National academy Press.

Pierce, K., & Schreibman, L. (1997). Multiple peer use of pivotal response training to increase social behaviors of classmates with autism: results from trained and untrained peers. *Journal of Applied Behavior Analysis, 30*(1), 157-160.

Shrestha, A. (2013). Using point-of-view video modeling and forward chaining to teach a functional self-help skill to a child with autism. *Journal of Behavioral Education, 22*(2), 157-167.

Snell, M. E., & Gast, D. L. (1981). Applying time delay procedure to the instruction of

the severely handicapped. *Journal of the Association of the Severely Handicapped, 6,* 3-14.

Spooner, F. (1984). Comparisons of backward chaining and total task presentation in training severely handicapped persons. *Education and Training in Mental Retardation, 19,* 15-22.

Spradlin, J. E., & Siegel, G. M. (1982). Language training in natural and clinical environments. *Journal of Speech and Hearing Disorders, 47*, 2-6.

Taylor, B. A., & Harris, S. L. (1995). Teaching children with autism to seek information: Acquisition of novel information and generalization of responding. *Journal of Applied Behavior Analysis, 28*, 3-14.

Whalen, C., & Schreibman, L. (2003). Joint attention training for children with autism using behavior modification procedures. *Journal of Child Psychology & Psychiatry*, *44*(3), 456-468.

Wolery, M. C. (2002). Ecological congruence assessment for classroom activities and routines: Identifying goals and intervention practices in childcare. *Topics In Early Childhood Special Education, 22*(3), 131-142.

Wolery, M., & Gast, D. L. (1984). Effective and efficient procedures for the transfer of stimulus control. *Topics in Early Childhood Special Education, 4,* 381-386.

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

About the Author

Dr. Debra Leach is a board certified behavior analyst and Associate Professor of Special Education at Winthrop University in Rock Hill, SC. She is the author of *Bringing ABA to Home School and Play for Young Children with Autism Spectrum Disorders and Other Disabilities* and *Bringing ABA into Your Inclusive Classrooms: A Guide to Improving Outcomes for Students with ASD.*