



EITI Newsletter

Early Intervention Training Institute

Fall 2008

Rose F. Kennedy Center, University Center for Excellence in Developmental Disabilities

APPLIED BEHAVIOR ANALYSIS: EARLY BEHAVIORAL INTERVENTION FOR CHILDREN

By Dimitra Robokos, Ed.M., Ph.D.

PRINCIPLES OF ABA

Applied Behavior Analysis (ABA) is a data-based process of systematically applying interventions based on the principles of behaviorism to improve socially significant behaviors. Behaviorism is a learning perspective and a philosophy of psychology based on the idea that all which we do, including our thoughts, feelings, and actions, are regarded as behaviors. ABA methods demonstrate via data collection procedures that the interventions employed are responsible for the improvement in specific behaviors. The approach is objective and measurable and research shows that ABA interventions result in positive behavioral changes. Early intensive behavioral intervention using ABA has received the greatest scientific scrutiny of all the intervention choices for autism and has become a treatment of choice for many parents and professionals (Jacobson, 2000).

Discrete Trial Teaching (DTT), also known as Discrete Trial Instruction (DTI), is the best-known method of ABA. DTT is characterized by a one-to-one interaction with a therapist. The therapist provides short and clear instructions and carefully planned and precisely timed procedures for prompting children to learn to follow the instructions. The therapist initially reinforces (rewards) each correct response and then gradually fades (eliminates) the prompts and reinforcement. DTT is used to teach specific skills, such as labeling colors, or receptively identifying shapes. For instance, a child learning to receptively label a color would be provided with the stimulus "touch red" while presented with a red flashcard. The therapist would then prompt the child accordingly (e.g., hand- over -hand guidance to touch the red card, pointing to the direction of the red card, etc.) so as to ensure the child correctly responds and learns what is intended when the stimulus "touch red" is presented. The child is reinforced with social praise or tangible rewards for each correct response. Prompts are systematically faded and the child will eventually be able to touch the red stimulus independently. The task becomes increasingly challenging by introducing a second color. When the second color is learned the child will then be taught to discriminate between the two colors ("touch red" or "touch yellow") when both

are presented simultaneously. Further steps might include receptively and expressively identifying colors when presented in an array of three, in a book, and around the home environment and other natural settings.

DTT has continued to be a popular intervention for children with autism and it has also been shown to have positive long-term outcomes in children (McEachin, Smith, & Lovaas, 1993). The term ABA does not only apply to DTT, as is often implied in the media and literature. ABA involves a variety of approaches (e.g., NET, CABAS, Carbone, Lovaas) that use different methodologies to implement behavioral principles as a means to teach children with autism and to help them manage their behavior. Furthermore, it is often a misconception that ABA is synonymous with a treatment for autism. ABA principles and techniques are frequently implemented and are successful with children who have other disabilities or behavior problems. The techniques may also be used in general education settings.

IMPLEMENTATION OF ABA INTERVENTIONS WITH YOUNG CHILDREN

For young children, such as toddlers, initial behavioral programs (each behavioral goal with its corresponding methodology for implementing the intervention is called a program) may include teaching the child to attend, make eye contact, and respond to his/her name. These types of skills prepare a child for the learning process. Once the children are ready to learn (readiness skills are mastered), new skills are usually taught in isolation. Early intervention behavioral programs follow a systematic approach of teaching fundamental learning skills including generalized imitation, visual discrimination, and matching to permit the acquisition of language and communication skills. Subsequent learning objectives address deficits in verbal behavior, personal care, socialization, play, motor skills, and pre-academic skills. Family participation is crucial in determining the effectiveness of an ABA program. An effective program should include easily accessible teaching tools for parents and teachers as well as suggestions for the parents to use the learned skills in the child's natural environment (i.e., generalization).

Functionally significant goals in all areas (i.e., cognitive, social, language, daily living, fine and gross motor skills) are developed by the lead therapist or consultant of the ABA team who manages all the behavioral programs. For instance, cognitive goals

might include teaching a child how to complete puzzle boards; fine motor goals typically include teaching a young child how to stack blocks; and a language goal for a nonverbal child could incorporate a vocal imitation program. The goals are made measurable, and baseline data are collected. Baseline data are quantitative information (e.g., percentages, rates, tally marks) collected to establish a profile at the time that a program commences. Baseline data are used as a benchmark for assessing outcomes and are used as a point of reference for measuring the child's overall progress. Once baseline data are established, the intervention begins. Goals are to reduce a particular behavior or to establish others. ABA involves ongoing data collection for each progressive step in a goal. The child's overall responses on a set of teaching trials are marked onto graphs to document the changes. Data related to each intervention are analyzed, monitored, and modified on a regular basis as a means to update a child's lesson plans/goals and to ensure that progress is made while the goals are made increasingly more challenging. Updates are usually completed by the lead therapist/consultant to the ABA team.

Therapists often simplify children's environments to maximize successes and positive behaviors, as well as to minimize failures. For example, they may work toward a target behavior by initially accepting a rough approximation of it and then reinforcing closer and closer approximations. This is known as shaping. For example, when a child is learning to verbally request desired items, but does not yet state the request correctly, the therapist would reinforce each successive approximation the child makes until the verbal request is said correctly. ABA therapists might also break complex behavior down into smaller units, teach each unit individually, and then link the units together. This is known as chaining. A behavior chain is a series of related behaviors, each of which provides the cue for the next. An example of chaining includes teaching a young child in sequential steps how to identify each number from 1-10 and then chaining the numbers together to help the child learn to count to 10 by rote. Another example of chaining is when a child is taught each component skill in getting dressed and then each step is linked together so the child can accomplish the task independently.

Natural Environment Training (NET). In order to generalize the skills taught during the acquisition phase (the discrete trial teaching period) there is natural environment training (NET). NET refers to using a child's natural motivation as a lead. This method uses the child's interests as a guide to initiate teaching and instruction and can be used in conjunction with DTT. The child's immediate interests and activities are used as a reward and this form of naturalistic learning is provided in the child's natural environment. The new skills are taught in a variety of new ways with different people and materials in naturalistic settings (e.g., during dinnertime, in the living room, while engaging with other family members). In this manner children are able to retain, use, and generalize new information more fluidly and independently than when they are engaged in

repeated trials alone.

Functional Behavioral Analysis (FBA). Behavior analytic treatment also emphasizes the use of functional analysis, sometimes referred to as functional behavioral analysis (FBA). In such analyses, therapists monitor the antecedents (events or activities that immediately precede a behavior) and consequences of behaviors (events that immediately follow a response) so that they can determine how to alter these antecedents and consequences to improve children's skills and behaviors. An Antecedent-Behavior-Consequence (ABC) Chart is a direct observation tool that can be used to collect information about the events that are occurring within a child's environment. An ABC Chart is used to organize information over several observation sessions by recording the types of behaviors observed and the events that precede and follow a particular behavior. Direct observation is especially important since it is less subjective than interview strategies that rely on gathering information based on a person's perceptions and memory. Observing and recording ABC data assists in forming a hypothesis statement and gathering evidence about the function maintaining a problem behavior. Then, strategies are introduced that systematically manipulate/modify antecedents and consequences in the environment so as to reduce disruptive behavior. For example, the person conducting the functional assessment asks some of the following questions when analyzing the data: "Is the behavior happening during the same activity and/or with the same materials?" "Does the behavior occur with specific people?" "Are there certain events or conditions that trigger or happen right before the behavior?" "Is there a consistent consequence used by the caregiver(s)?" "Does the child stop the behavior after a specific consequence?". If the data indicate a consistent pattern, the intervenor considers what the pattern suggests about the function or purpose of the behavior. It is always crucial during functional assessments of behavior to consider possible personal factors that may be influencing the behavior such as the child being sick, tired, or hungry.

Pivotal Response Training (PRT). Many children with autism who are in ABA programs do indeed learn many of the skills in which they are trained. In some situations, however, there is a lack of ability to generalize the skills outside of the highly structured therapy setting. Many ABA therapists are moving toward using a more naturalistic learning environment and rely less on the traditional discrete trial teaching methods (Delpratto, 2001). Recent evolutions of the ABA approach are beginning to recognize and integrate the fundamental role of social development and are focusing on training children on what are known as "pivotal skills," such as joint attention. Pivotal Response Training (PRT), a form of naturalistic ABA intervention developed by Koegel et al. (1989), identified two pivotal behaviors that appeared to affect a wide range of behaviors in children with autism: motivation and responsivity to multiple cues. These behaviors are central to a wide area of functioning so positive changes in these behaviors can have widespread effects on other

behaviors. PRT works to increase the child's motivation by including components such as child-choice, turn-taking, reinforcing attempts, and interspersing maintenance tasks (tasks and skills that were previously mastered).

EFFICACY RESEARCH

More than 20 years of research and clinical data demonstrate that behavioral programs represent one of the most effective treatments for children, particularly for children with autism (e.g., Mc Eachin, Smith, & Lovaas, 1993; Smith, Groen, & Wynn, 2000). DTT has been empirically supported as a treatment designed to address the core symptoms of autism including language delays, social and play skills, and restricted and repetitive behaviors as well as other related deficits in cognition and adaptive behavior (Howard et al., 2005). In a seminal study by Lovaas (1987) implementing the use of DTT, he provided approximately 40 hours a week of individualized behavioral treatment for a period of two years or more to an experimental group of 19 children with autism who were under four years of age. When re-evaluated at a mean age of seven years, participants in the experimental group had gained an average of 20 points in their IQ scores and had made many advances in educational achievement by contrast to the control group. In general, the children who obtained the best outcomes were reported to maintain their gains up to five years after treatment (McEachin, Smith, & Lovaas, 1993). A more recent study by Butter et al. (2006) also demonstrated similar outcomes among a group of eight children (mean age of 32 months) who were previously diagnosed with an autism spectrum disorder and mental retardation who, after early intensive behavioral treatment, no longer met criteria for mental retardation or an autism spectrum disorder, although language skills remained impaired for some of the children. Other studies, too, have documented the efficacy of early intensive ABA programs for young children (e.g., Howard et al., 2005; Sallows & Graupner, 2005; Smith, Groen, & Wynn, 2000).

Recent evidence shows that gains can be made using ABA in a more naturalistic approach with a less intense framework (Paul, 2001). Prizant & Wetherby (1998) reviewed programs that were more naturalistic in focus (social-pragmatic skills with a developmental approach were emphasized) and found that these programs showed the same benefits as traditional discrete trial ABA programs in addition to increased generalization skills. Like DTT, PRT has been shown to be effective in a number of published research studies and has helped children increase language, play, imitation, and social skills, as well as joint attention (e.g., Koegel, Koegel, & McNERNEY, 2001; Whalen & Schreibman, 2003).

CONCLUSION

In conclusion, whether DTT, PRT or any other forms of ABA are used, it is critical that the implementation of behavioral interventions is developmentally appropriate, based on empirical research, and addresses the family as a partner in the intervention

process, particularly as it pertains to the treatment of very young children.

References

- Butter, E.M., Mulick, J.A., & Metz, B. (2006). Eight case reports of learning recovery in children with Pervasive Developmental Disorders after early intervention. *Behavioral Interventions, 21*, 227-243.
- Delpratto, D.J. (2001). Comparisons of discrete-trial and normalized behavioral language intervention for young children with autism. *Journal of Autism and Developmental Disorders 31*(3), 315-325.
- Howard, J. S., Sparkman, C. R., Cohen, H. G., Green, G., & Stanislaw, H. (2005). A Comparison of behavior analytic and eclectic treatments for young children with autism. *Research in Developmental Disabilities, 26*, 359-383.
- Jacobson, J.W. (2000). Early intensive behavioral intervention: Emergence of a consumer driven model. *The Behavior Analyst, 23*, 149-171.
- Koegel, R. L., Koegel, L. K., & McNERNEY, E. K. (2001). Pivotal areas in intervention for autism. *Journal of Clinical Child Psychology, 30*, 19-32.
- Koegel, R. L., Schreibman, L., Good, A., Cemiglia, L., Murphy, C., & Koegel, L. K. (1989). *How to teach pivotal behaviors to children with autism: A training manual*. Santa Barbara: University of California, Santa Barbara.
- Lovaas, I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology, 55*, 3-9.
- Mc Eachin, J.J., Smith, T., & Lovaas, I. (1993). Long-term outcome for children with autism who received early intensive behavioural treatment. *American Journal of Mental Retardation, 97*, 359-372.
- Prizant, B. M., & Wetherby, A. M. (1998). Understanding the continuum of discrete-trial traditional behavioral to social-pragmatic developmental approaches in communication enhancement for young children with autism/PDD. *Seminars in Speech and Language, 19*(1), 329-353.
- Sallows, G. O., & Graupner, T. D. (2005). Intensive behavioral treatment for children with Autism: Four-year outcome and predictors. *American Journal on Mental Retardation, 110*, 417-437.
- Schreibman, L., & Pierce, K. (1993). Achieving greater generalization of treatment effects in children with autism: Pivotal response training and self management. *The Clinical Psychologist, 46*, 184-191.
- Smith, T., Groen, A. D., & Wynn, J. W. (2000). Randomized trial of intensive early intervention for children with pervasive developmental disorder. *American Journal on Mental Retardation, 105*, 269-285.

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

Acknowledgements

I would like to thank Marcie Beigel, M.A., BCBA for her thoughtful feedback and contributions to this newsletter.

Copyright © 2008