

Discrete Trial Training

This is an alternate version of the characteristics overview chart on the next page. It is provided for accessibility.

Verbal skills

- Nonverbal
- Mixed
- Verbal

Grade Level

- PK
- Elementary
- Middle/High


Cognitive Level

- Classic
- High Functioning

Areas Addressed

- (Pre)Academic/Cognitive/Academic
- Adaptive Behavior/Daily Living
- Behavior
- Communication/Speech
- Social/Emotional

Discrete Trial Training

 Verbal Skills	Grade Levels	Cognitive Level	Areas Addressed
<input checked="" type="checkbox"/> Nonverbal	<input checked="" type="checkbox"/> PK	<input checked="" type="checkbox"/> Classic	<input checked="" type="checkbox"/> (Pre)Academic/ Cognitive/Academic
<input checked="" type="checkbox"/> Mixed	<input checked="" type="checkbox"/> Elementary	<input checked="" type="checkbox"/> High	<input checked="" type="checkbox"/> Adaptive Behavior/ Daily Living
<input checked="" type="checkbox"/> Verbal	<input checked="" type="checkbox"/> Middle/High	Functioning	<input checked="" type="checkbox"/> Behavior
			<input checked="" type="checkbox"/> Communication/Speech
			<input checked="" type="checkbox"/> Social/Emotional



Brief Introduction

Discrete trial training (DTT) is an applied behavior analysis strategy that focuses on skill acquisition by manipulating the sequence of antecedents and consequences. The main components of DTT include instruction, prompting, response, consequence, and inter-trial interval.



Description

DTT is a method of teaching new skills, consisting of a series of distinct repeated lessons or trials taught one-to-one. Lovaas (1981) defined a trial as a “single teaching unit.” A particular trial typically consists of four parts: (a) the discriminative stimulus (S^D) (the instruction), (b) the response (R), (c) the consequence or the reinforcing stimulus (S^R), and (d) the inter-trial interval (IT^I) (presentation wait time). In addition, an optional prompt (S^P) may be used to help the child respond correctly. The parts of the discrete trial are often represented symbolically in an order like the following:

$$S^D \longrightarrow R \longrightarrow S^R \longrightarrow IT^I (S^P)$$

Essentially, first the teacher’s instruction is given (S^D). A prompt, cue, or model from the teacher may be provided to help the child respond correctly (S^P). Then the child responds to the instruction, either with help or without (R). The child’s response is evaluated as correct, incorrect, or no response. Last, a consequence based on the child’s response relative to a predetermined criterion follows (S^R). Afterward the teacher pauses a little while before continuing to let the child know that they have completed one set and have moved on to the next (IT^I).

A significant amount of research supports the use of DTT with individuals with autism (AU) in a variety of settings. DTT can help to compensate for challenges faced by this population and is beneficial for them for the following reasons:

- In DTT, tasks are broken down into short and simple trials that accommodate the needs of individuals with short attention spans.
- DTT attempts to build motivation by rewarding performance of desired behavior and completion of tasks with tangible or external reinforcement.
- Stimuli presented in DTT are clear and relatively consistent. The child is given rewards only for behaviors in response to those stimuli.
- DTT teaches skills and behaviors explicitly (cause-effect learning).
- The instructions given in DTT are simple, concrete, and clearly provide only the most salient information.
- DTT can be designed to teach perspective taking and social cognition skills explicitly.

DTT must be individually and carefully applied since each child with AU exhibits unique combinations of deficits and excesses in various areas (Lovaas, 1987; Smith, 2001). Furthermore, caution must be exercised not to adopt this strategy to the exclusion of all other interventions. In addition, if DTT is used as an instructional strategy, generalization of the skill must be considered.



Steps

1. *Instruction.* A teacher gives succinct and clear instruction to a student. The use of few and consistent words is preferred.
2. *Prompting.* Based on the student's learning level and the complexity of the task, the teacher gives appropriate prompts to trigger the desired response.
3. *Response.* The student responds to the teaching and prompting. The responding behavior must be measurable.
4. *Consequence.* The teacher gives immediate feedback and reinforcement after student's response to enhance skill acquisition.
5. *Inter-trial interval.* A clear wait time is inserted after a trial completion before moving onto the next trial.



Brief Example

To teach 4-year-old Jin to identify colors, Jin and her teacher sat down at a table in a quiet corner of the classroom. After getting Jin's attention on task, the teacher presented Jin's "penny board," which Jin was familiar with, and told her clearly that if she got five correct answers, she would be allowed to choose a desired activity.

Three cards of different colors were presented on the table. The teacher stated the color of each card while pointing to the card. After repeating this sequence, the teacher scrambled the three cards and put them on the table for Jin to practice. The teacher pointed to a card and said, "What color is it?" Waiting for couple of seconds, the teacher prompted Jin by exaggerating the first sound of "blue," for example. When Jin gave the right answer, she received a "penny" and verbal praise from the teacher.

The practice continued to follow this structure of steps until Jin mastered the skill. The teacher recorded data on every response and administered reinforcement for each correct answer. When finishing the trial, they counted the "pennies" Jin had earned. Because she had earned five "pennies," she earned five minutes of play with a toy she had selected from her reinforcement menu.



Summary

DTT is aimed at manipulating the sequences of antecedents and consequences in a structured setting. Most often used in a one-to-one setting, DTT contains five distinct steps for skills acquisition. Regular data collection provides detailed information to guide future instruction.



Research Table

# of Studies	Ages (years)	Sample Size	Area(s) Addressed	Outcome
23	3-13	189	Communication, behavior generalization, parent DTT training, object matching, PECS, vocal imitation, motor, person/social functioning, cognitive functioning, stereotype behaviors, parent education, social-emotional functioning, out-of-seat behavior, motor imitation, daily living skills, identifying emotions, identifying objects, IQ, joint attention, spontaneous responses, social interaction, social quotients, listener skills, adaptive behavior; play responses	+



Studies Cited in the Research Table

1. Dib, N., & Sturmey, P. (2007). Reducing student stereotypy by improving teachers' implementation of discrete-trial teaching. *Journal of Applied Behavior Analysis, 40*, 339-343.
The study evaluated the indirect effects of discrete-trial teaching on three students' stereotypy. Instructions, feedback, modeling, and rehearsal were used to improve implementation of discrete-trial teaching in a private school for children with autism. Findings showed that improvements in accurate teaching were accompanied by systematic decreases in students' levels of stereotypy.
2. Downs, A., Downs, R. C., Johansen, M., & Fossum, M. (2007). Using discrete trial teaching within a public preschool program to facilitate skill development in students with developmental disabilities. *Education & Treatment of Children, 30*(3), 1-27.
The study evaluated the practicality and effectiveness of providing DTT instruction to children with a wide range of developmental disabilities within a public preschool program. Twelve participants were randomly assigned to receive DTT or individual attention in a control condition. The project evaluated the effects of providing DTT on the participants' cognitive, language, behavioral, and social-emotional functioning. Results generally indicated positive changes in adaptive behavior development and social-emotional functioning for students who received DTT.
3. Hilton, J. C., & Seal, B. C. (2007). Brief report: Comparative ABA and DIR trials in twin brothers with autism. *Journal of Autism and Developmental Disorders, 37*, 1197-1201.
Trial interventions in Floor Time™ and DTT with twin brothers with AU were offered to help the parents choose one of the programs for their sons. Pre- and posttest scores on the Communication and Symbolic Behavior Scales (CSBS) revealed a slight gain in the composite score of the child who received DTT and a slight decrease in the score of the child who received Floor Time™.
4. Jones, E. A., Feeley, K. M., & Takacs, J. (2007). Teaching spontaneous responses to young children with autism. *Journal of Applied Behavior Analysis, 40*, 565-570.
This study evaluated the effectiveness of intensive intervention in establishing spontaneous verbal responses of two young children with AU. The intervention involved discrete trial instruction, specific prompts, and error corrections. Data showed positive outcomes of the intervention.
5. Reed, P., Osborne, L. A., & Corness, M. (2007). Brief report: Relative effectiveness of different home-based behavioral approaches to early teaching intervention. *Journal of Autism and Developmental Disorders, 37*, 1815-1821.
The effectiveness of home-based early behavioral interventions for children with AU was studied. A total of 27 participants were sampled. Results indicated that (a) high-intensity behavioral approaches produced greater gains than low-intensity programs; (b) Lovaas and complete application of behavior analysis to approach-type interventions produced the largest gains; and (c) within the high-intensity groups, increased temporal input on the program was not associated with increased gains in the children. Furthermore, the results from clinic-based DTT trials were partially replicated on a home-based sample using children with greater autistic and intellectual impairments.
6. Kroeger, K. A., & Nelson, W. M. (2006). A language programme to increase the verbal production of a child dually diagnosed with Down Syndrome and autism. *Journal of Intellectual Disability Research, 50*, 101-108.
This single-subject experiment examined a program designed to increase the language production and verbal behavior of a 9-year-old boy who had been receiving a 15-hour per week home-based DTT program. Results indicated that language production noticeably increased for each target area after the introduction of the

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language program and was maintained at a nine-month follow-up session. Thus, a combined treatment approach incorporating direct instruction, natural environment teaching, and incidental teaching was effective in increasing and maintaining responsive and spontaneous speech in a child with Down Syndrome diagnosed with AU.

7. Sigafoos, J., O'Reilly, M., Ma, C. H., Edrisinha, C., Cannella, H., & Lancioni, G. E. (2006). Effects of embedded instruction versus discrete-trial training on self-injury, correct responding, and mood in a child with autism. *Journal of Intellectual & Developmental Disability, 31*, 196-203.
This study compared embedded instruction with discrete-trial training for a 12-year-old boy with AU. Instructional sessions to teach adaptive behaviors were conducted under two conditions: (a) embedded instruction, learning trials were inserted into ongoing activities at a rate of approximately 1.5 per minute; and (b) discrete-trial training, instructional opportunities were incorporated into structured sessions at a rate of four per minute. In both conditions, the system of least prompts was used to teach relevant target responses. Results indicated higher rates of self-injury and fewer correct responses during discrete-trial training. Mood ratings were also lower during discrete-trial training. These findings suggested that although discrete-trial training can be highly effective, it may be preferable to start with embedded instruction when the child presents with self-injurious escape behaviors.
8. Farrell, P., Trigonaki, N., & Webster, D. (2005). An exploratory evaluation of two early intervention programmes for young children with autism. *Educational and Child Psychology, 22*, 29-40.
This article discussed the impact of two contrasting early intervention programs, DTT/Lovaas and the Lancashire Under Fives Autism Project (LUFAP) for three young children with AU. The findings suggest that all parents, teachers, and therapists were positive about the impact of both programs. The parents felt supported and were pleased with their children's progress. Teachers, especially those linked to the LUFAP program, were positive about having a child with AU in their school. Data indicated that all the children made progress as measured by the Vineland and the Bayley Scales. However, the rate of progress made by those on the LUFAP program was more encouraging than that of children on the DTT/Lovaas program although this may be attributable to initial group differences.
9. Grindle, C. F., & Remington, B. (2005). Teaching children with autism when reward is delayed: The effects of two kinds of marking stimuli. *Journal of Autism and Developmental Disorders, 35*, 839-850.
Three children with AU were taught to identify pictures of emotions in response to their spoken names. In the marked-before condition, an instruction encouraged the children to visually orient to the cards before they made their choice response; in the marked-after condition, an attention-eliciting verbal cue (e.g., "Look!") was delivered after both correct and incorrect responses; finally, in the delay condition, the marking cues were omitted. Results showed that performance in the no-cue control was inferior to both the marked-before and marked-after conditions, but the difference between the latter two conditions was not significant.
10. Devlin, S. D., & Harber, M. M. (2004). Collaboration among parents and professionals with discrete trial training in the treatment for autism. *Education and Training in Developmental Disabilities, 39*, 291-300.
This study evaluated the impact of collaborative efforts of parents and school professionals in teaching a 5-year-old boy with AU DTT across settings. Findings showed that young children with AU can obtain significant gains in fine-motor, person/social, language, and perceptual cognitive functioning through the use of DTT occurring 20-24 hours per week across settings.

11. Dillenburger, K., Keenan, M., Gallagher, S., & McElhinney, M. (2004). Parent education and home-based behavior analytic intervention: An examination of parents' perceptions of outcome. *Journal of Intellectual & Developmental Disability, 29*, 119-130.
This study examined parents' perceptions of the outcome of DTT programs. Twenty-two questionnaires were completed by two groups of parents. The first group had just completed an introductory course in applied behavior analysis and were in the early stages of implementing DTT programs with their children. The second group had been involved in education for more than two years. Overall, both groups of parents reported a positive impact. The long-term group reported that they had achieved complex goals with their children, whereas the short-term group reported an immediate positive impact on child and family functioning and parental self-esteem.
12. Grindle, C. F., & Remington, B. (2002). Discrete-trial training for autistic children when reward is delayed: A comparison of conditioned cue value and response marking. *Journal of Applied Behavior Analysis, 35*, 187-190.
Three children with AU (aged 4-8) were taught to identify pictures of objects, and their speed of acquisition of receptive speech skills was compared across two conditions. In the cue-value condition, a compound audiovisual stimulus was presented after correct responses and again when a primary reinforcer was delivered after a 5-second delay. In the response-marking condition, a second stimulus was presented after both correct and incorrect responses, but not prior to the primary reinforcer. In both conditions, primary reinforcement was delayed for five seconds. Although the children learned receptive speech skills in both conditions, acquisition was faster in the cue-value condition.
13. McElwee, J., & Munson, S. (2002). Attaining fluency by a youngster with autism for a beginning listener skill. *Journal of Precision Teaching & Celebration, 18*, 30-32.
The study reported a case of a 7-year-old boy with AU who received a program that used primarily DTT for almost four years. The child was assessed on attaining fluency for the basic listener skill. The study revealed positive outcomes of the intervention. In addition, all retention checks were positive.
14. Charlop-Christy, M. H., & Carpenter, M. H. (2000). Modified incidental teaching sessions: A procedure for parents to increase spontaneous speech in their children with autism. *Journal of Positive Behavior Interventions, 2*, 98-112.
The study compared the efficacy of modified incidental teaching sessions with traditional discrete trial training. Parents of three children with AU were trained to deliver modified incidental teaching, traditional discrete trial, and incidental teaching in their home. The acquisition and generalization of the behavior were measured. Results indicated that modified incidental teaching sessions led to acquisition for all children. By comparison, only one child acquired the behavior with traditional incidental teaching, and two children acquired the behavior with discrete trial. Generalization was documented in the modified incidental teaching sessions, whereas no generalization was found in the incidental teaching and discrete trial conditions.
15. Cummings, A. R., & Williams, W. L. (2000). Visual identity matching and vocal imitation training with children with autism: A surprising finding. *Journal on Developmental Disabilities, Special Issue: Recent Research on the Assessment of Basic Learning Abilities Test, 7*, 109-122.
Five boys with pervasive developmental disorders or AU participated in this study as part of their ongoing weekly in-home, one-to-one, discrete-trial training therapy. For each child, trained therapists conducted daily sessions in a varying order of (a) three-choice identity matching-to-sample using three-dimensional objects, then matching of objects to pictures of objects, then matching of pictures to pictures; (b) Picture Exchange Communication System (PECS); and (c) vocal imitation. Results indicated that all participants learned to match objects to objects, then objects to pictures, and finally pictures to pictures. Shortly after meeting criterion on matching objects to pictures or pictures to pictures, four children learned to respond correctly on PECS. Furthermore, those four children learned to imitate simple sounds within a few sessions after demonstrating mastery of the PECS.

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16. Harris, S. L., & Handleman, J. S. (2000). Age and IQ at intake as predictors of placement for young children with autism: A four- to six-year follow-up. *Journal of Autism and Developmental Disorders, 30*, 137-142.
This study examined the predictive power of age and IQ at time of admission to an intensive treatment program using DTT in a 4- to 6-year follow-up of educational placement. Twenty-seven children with AU who were between the ages of 31 and 65 months and had IQs on the Stanford Binet between 35 and 109 at time of admission to a developmental disabilities center were followed up four to six years after they left the preschool. The results showed that having a higher IQ at intake and being younger were both predictive of being in a general education class after discharge, whereas having a lower IQ and being older at intake were closely related to placement in a special education classroom. In addition, the older children and those with lower IQs showed measurable gains in IQ from treatment.
17. Graff, R. B., Green, G., & Libby, M. E. (1998). Effects of two levels of treatment intensity on a young child with severe disabilities. *Behavioral Interventions, 13*, 21-41.
The study evaluated the effects of two levels of center-based behavioral intervention for a young boy with diagnoses of AU, severe ADHD, bipolar disorder, and severe developmental delay. The child entered school and a residential program that used DTT at age 4. For the first phase of the study, the teacher-to-student ratio was 1:1 and lasted 12 months. Next, the teacher-to-student ratio became 1:2 (the second phase), which continued for nine months. The child's out-of-seat behavior, aberrant behavior, motor imitation, stereotypic responses, matching to sample, and appropriate communication were measured. By the end of the first phase, substantial improvements were documented and medication was discontinued.
18. McEachin, J. J., Smith, T., & Lovaas, O. I. (1993). Long-term outcome for children with autism who received early intensive behavioral treatment. *American Journal of Mental Retardation, 97*, 359-372.
A follow-up of Lovaas' (1987) study was conducted to verify whether behavior treatment may produce long-lasting gains for children with AU. Thirty-eight children with AU participated. Results indicated that (a) children in the experimental group maintained their level of intellectual functioning between the previous assessment at age 7 and the evaluation at a mean age of 13; (b) children in the experimental group displayed significantly higher levels of functioning than did control subjects; and (c) nine children who had been classified as "best-outcome" in the previous study exhibited average intelligence and average levels of adaptive functioning.
19. Miranda-Linné, F., & Melin, L. (1992). Acquisition, generalization, and spontaneous use of color adjectives: A comparison of incidental teaching and traditional discrete-trial procedures for children with autism. *Research in Developmental Disabilities, 13*, 191-210.
This study used incidental teaching and traditional discrete-trial procedures to teach two boys with AU the expressive use of two color adjectives to describe preferred toys and food items. Results showed that traditional discrete-trial teaching was more efficient and produced faster acquisition and, initially, greater generalization. However, by follow-up, the incidental teaching methods resulted in equal retention, greater generalization, and equal or greater spontaneous usage. Together, findings indicate that although it takes longer for children with AU to learn using incidental teaching procedures, once the skills have been acquired, they may be more permanent.
20. Woods, T. S. (1987). Programming common antecedents: A practical strategy for enhancing the generality of learning. *Behavioral Psychotherapy, 15*, 158-180.
Four boys with AU were taught to perform coloring and block-assembly play responses within a discrete-trial training paradigm. Two training strategies that differed with respect to antecedent cueing methods were compared: a naturalistic cueing procedure and a more conventional approach of giving verbal instructions to instigate play responses. Generalization across comparable play "tasks" with only naturalistic cueing was probed. Findings indicated substantially more carryover for all four boys when the antecedent cues for training matched those in the generalization condition.

21. Kayser, J. E., Billingsley, F. F., & Neel, R. S. (1986). A comparison of in-context and traditional instructional approaches: Total task, single trial versus backward chaining, multiple trials. *Journal of the Association for Persons with Severe Handicaps*, 11, 28-38.
The study compared the effects of total-task/single-trial and backward-chaining/multiple-trials instruction in a program teaching eight children with severe disabilities how to make a snack. Findings suggested that total-task/single-trial instruction resulted in superior acquisition of independent steps in the training setting for three of the eight participants and less substantial effects for two participants. For three participants, differences between the two methods were negligible or nonexistent in terms of independent steps. In all cases, instructional time was substantially less for total-task/single-trial instruction than for backward-chaining/multiple-trials instruction. Findings related to generalization were mixed.
22. Cohen, M. (1981). Development of language behavior in an autistic child using total communication. *Exceptional Children*, 47, 379-381.
The study demonstrated the effectiveness of a procedure employing behavior modification techniques (e.g., modeling, stimulus control) in conjunction with a total communication approach in the training of verbal labeling behavior and rudimentary telegraphic speech. It simultaneously decreased echolalia in a 4-year-old girl with AU.
23. Lovaas, O. I., Koegel, R., Simmons, J. Q., & Long, J. S. (1973). Some generalization and follow-up measure on autistic children in behavior therapy. *Journal of Applied Behavior Analysis*, 6, 131-166.
Twenty individuals with AU were treated with behavior therapy. Findings suggested that (a) inappropriate behaviors decreased and appropriate behavior increased, (b) spontaneous social interaction and spontaneous use of language occurred for some of the participants, (c) IQs and social quotients reflected improvement overall – every participant made improvement and skills were maintained during the follow-up.



References

- Charlop-Christy, M. H., & Carpenter, M. H. (2000). Modified incidental teaching sessions: A procedure for parents to increase spontaneous speech in their children with autism. *Journal of Positive Behavior Interventions*, 2, 98-112.
- Cohen, M. (1981). Development of language behavior in an autistic child using total communication. *Exceptional Children*, 47, 379-381.
- Cummings, A. R., & Williams, W. L. (2000). Visual identity matching and vocal imitation training with children with autism: A surprising finding. *Journal on Developmental Disabilities. Special Issue: Recent Research on the Assessment of Basic Learning Abilities Test*, 7, 109-122.
- Devlin, S. D., & Harber, M. M. (2004). Collaboration among parents and professionals with discrete trial training in the treatment for autism. *Education and Training in Developmental Disabilities*, 39, 291-300.
- Dib, N., & Sturmey, P. (2007). Reducing student stereotypy by improving teachers' implementation of discrete-trial teaching. *Journal of Applied Behavior Analysis*, 40, 339-343.
- Dillenburger, K., Keenan, M., Gallagher, S., & McElhinney, M. (2004). Parent education and home-based behavior analytic intervention: An examination of parents' perceptions of outcome. *Journal of Intellectual & Developmental Disability*, 29, 119-130.
- Downs, A., Downs, R. C., Johansen, M., & Fossum, M. (2007). Using discrete trial teaching within a public preschool program to facilitate skill development in students with developmental disabilities. *Education & Treatment of Children*, 30(3), 1-27.
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- Graff, R. B., Green, G., & Libby, M. E. (1998). Effects of two levels of treatment intensity on a young child with severe disabilities. *Behavioral Interventions*, 13, 21-41.
- Grindle, C. F., & Remington, B. (2002). Discrete-trial training for autistic children when reward is delayed: A comparison of conditioned cue value and response marking. *Journal of Applied Behavior Analysis*, 35, 187-190.
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- Harris, S. L., & Handleman, J. S. (2000). Age and IQ at intake as predictors of placement for young children with autism: A four- to six-year follow-up. *Journal of Autism and Developmental Disorders*, 30, 137-142.
- Hilton, J. C., & Seal, B. C. (2007). Brief report: Comparative ABA and DIR trials in twin brothers with autism. *Journal of Autism and Developmental Disorders*, 37, 1197-1201.
- Jones, E. A., Feeley, K. M., & Takacs, J. (2007). Teaching spontaneous responses to young children with autism. *Journal of Applied Behavior Analysis*, 40, 565-570.
- Kayser, J. E., Billingsley, F. F., & Neel, R. S. (1986). A comparison of in-context and traditional instructional approaches: Total task, single trial versus backward chaining, multiple trials. *Journal of the Association for Persons with Severe Handicaps*, 11, 28-38.
- Kroeger, K. A., & Nelson, W. M. (2006). A language programme to increase the verbal production of a child dually diagnosed with Down Syndrome and autism. *Journal of Intellectual Disability Research*, 50, 101-108.
- Lovaas, O. I. (1981). *Teaching developmentally disabled children: The me book*. Baltimore: University Park Press.
- Lovaas, O. I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology*, 55, 3-9.
- Lovaas, O. I., Koegel, R., Simmons, J. Q., & Long, J. S. (1973). Some generalization and follow-up measure on autistic children in behavior therapy. *Journal of Applied Behavior Analysis*, 6, 131-166.
- McEachin, J. J., Smith, T., & Lovaas, O. I. (1993). Long-term outcome for children with autism who received early intensive behavioral treatment. *American Journal of Mental Retardation*, 97, 359-372.
- McElwee, J., & Munson, S. (2002). Attaining fluency by a youngster with autism for a beginning listener skill. *Journal of Precision Teaching & Celebration*, 18, 30-32.
- Miranda-Linné, F., & Melin, L. (1992). Acquisition, generalization, and spontaneous use of color adjectives: A comparison of incidental teaching and traditional discrete-trial procedures for children with autism. *Research in Developmental Disabilities*, 13, 191-210.
- Reed, P., Osborne, L. A., & Corness, M. (2007). Brief report: Relative effectiveness of different home-based behavioral approaches to early teaching intervention. *Journal of Autism and Developmental Disorders*, 37, 1815-1821.
- Sigafoos, J., O'Reilly, M., Ma, C. H., Edrisinha, C., Cannella, H., & Lancioni, G. E. (2006). Effects of embedded instruction versus discrete-trial training on self-injury, correct responding, and mood in a child with autism. *Journal of Intellectual & Developmental Disability*, 31, 196-203.
- Smith, T. (2001). Discrete trial training in the treatment of autism. *Focus on Autism and Other Developmental Disabilities*, 16, 86-92.
- Woods, T. S. (1987). Programming common antecedents: A practical strategy for enhancing the generality of learning. *Behavioral Psychotherapy*, 15, 158-180.



Resources and Materials

- Applied Behavioral Analysis and Discrete Trial Training: www.autismconnectmd.org/education/methods/aba.html
This links to a brief description of methods and strategies for ABA and DTT.
- A Brief Explanation of Discrete Trial Training: www.isdd.indiana.edu/irca/behavior/discretetri.htm
This page is a brief explanation of DTT, including a comparison of DTT and the Lovaas approach.
- Lovaas Institute for Early Intervention: www.lovaas.com
This website provides introductory information about the Lovaas approach, which uses DTT.
- Teaching Children with Autism: The Discrete Trial: www.polyxo.com/discretetri.html
This resource presents the scope of DTT and provides a basic example.