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CD REVIEW

ABA AND THE COMPUTER: A REVIEW OF THE *DISCRETE TRIAL TRAINER*

The Discrete Trial Trainer. 2000. Accelerations Educational Software. West Columbia, SC. E-mail address: Sales@DTTrainer.com. Price: $300.00 (with upgrades and support for a year); $565.00 (unlimited students in a school with upgrades and support for a year).

A popular misconception about behavioral interventions for autism is that discrete trial training turns children into 'robots.' Critics contend that children taught using applied behavioral analysis (ABA) respond and if verbal, speak, in measured and mechanical ways. Surely, the notion of using a computer program to implement discrete trial instruction would only make children more 'robotic,' these critics would say. Well, perhaps. But the advantages offered from using computer technology to deliver some portion of an ABA program to children with autism are so varied that any such software should be given close scrutiny. If a computer based instrument could capture all the relevant aspects of an ABA intervention (e.g. prompting, reinforcement, curriculum adjustments, data collection), then the benefits of reduced personnel cost, increased training time for the learner, and immediate data collection would be invaluable.

Much of this has been accomplished in the *Discrete Trial Trainer* (*DT Trainer*), a new release from Accelerations Educational Software (AES). Karl Smith, the parent of a child with autism, developed the software. Like many parents of a child diagnosed with autism, Smith and his wife frantically searched for answers and interventions. Deciding to implement a home-based, early intensive intervention program, the Smith's encountered the typical obstacles: problems such as their son's social avoidance of people, including teachers; what to do with their son during the 'down-time' when he was not engaged in therapeutic one-on-one activities; high staff turnover leading to 'holes' in the therapy schedule; and the need for highly salient, constantly changing positive reinforcement.

Smith's *DT Trainer* was designed, in part, to provide solutions to these problems. The program is able to serve multiple students, not just one, which promotes its usability in a classroom setting. It is highly flexible and can be customized to meet many students' varied learning styles and skill deficits. A trial looks very similar to

the kind of trial that would be delivered by a therapist in an ABA program. The learner is presented with a discriminative stimulus (SD), such as 'What is the day that comes after Sunday?' and on the screen is the text 'Monday' in a white box with a gray background. The SD can be delivered verbally, textually (for the student who reads), or in both manners. Initially, the correct answer is presented alone, the lowest level prompt. The learner is to respond by either touching the correct answer on the screen, or if the child has adequate mouse skills, using a 'point and click' response. When a child responds correctly, the computer delivers reinforcement. In subsequent trials, as the learner responds correctly, distracter items are added (e.g. 'Wednesday'). Positional and stimulus prompts are provided by the position or size of the distracter(s) in relation to the correct answer. Prompts are faded over the course of subsequent trials depending upon the student's success.

The program provides a variety of computer-based reinforcement including interactive and non-interactive types. Categories include activities such as 'point and click' puzzles, children's songs, animations, and non-interactive visually stimulating images similar to the variety of standard Microsoft screen savers on most computers. A child's reinforcement package is customized by the 'system administrator' (i.e. parent, teacher, therapist, consultant). Types of reinforcers, schedules of reinforcement, inter-trial intervals, and reinforcer choice can be easily manipulated by the administrator. Reinforcer assessments can be completed from a test screen to determine the value of any one activity or animation. When the program is in 'train' mode, that is when the student is training, the timing of reinforcement is immediate based on the predetermined schedule. Human teachers seldom achieve this kind of behavioral precision. The program contains sensory reinforcers, both interactive and non-interactive, that are really quite clever and varied.

In the current version of the *DT Trainer*, the curriculum provided is limited, though AES has indicated that more content is coming. The release we reviewed includes programs that involve receptive labeling and receptive identification of function. Also, there are programs designed to address pre- and early academic concepts such as money identification, days/months, letters, prepositions, and numbers. The content we saw would not be suitable for a student who has advanced beyond receptive labeling, receptive functions, and basic early academic information. Though this content may not benefit the advanced learner who has developed receptive and expressive language, the content would be useful for maintenance and generalization for the intermediate learner.

Data collection is automatic. This is a hugely valuable component of the program. Anyone who has taken data on a student doing Early Intensive Behavioral Intervention knows that it can be a cumbersome, staff intensive, and, often, inefficient process. Multiple individual student and 'class' reports, if the program is being used

in a school setting, can be generated and printed with ease. The data can be quickly scanned to measure student progress, identify problem areas, and develop a plan of action. Because the *DT Trainer* reports do not offer exact solutions for learning failure, any ABA program that uses this software still needs to be guided by a knowledgeable behavior analyst to assist in making program and curriculum decisions.

Learning to use the *DT Trainer* will take only a short amount of time for teachers familiar with ABA techniques. The self-paced training modules, provided on a separate CD, facilitate quick access to the software. Comprehensive training in using the software spans five modules and includes training in how to interpret student data reports and how to address learning failure through changing each student's program. The training sequence is logical and well organized. Each module was created in a narrated Microsoft PowerPoint™ slide show. Each slide is reprinted in the accompanying manual where the narration for each slide is provided in a text format. Though the modules are self-paced, it would be helpful to the teacher, therapist, or parent to know how long each module takes to read; time estimates were not provided by AES. The software developers have assumed that users of *DT Trainer* are familiar with students with autism and applied behavior analysis. Little is said in the training modules about applied behavior analysis or learning theory. Similarly, the training modules do not extensively address the different learning styles and range of impairments among children with autism. Thus, though the training modules provide sufficient information to use the *DT Trainer* software, it is not to be a substitute for more comprehensive training in applied behavior analysis and the special considerations in teaching learners with autism.

There are some drawbacks to consider when using a computer based teaching tool. Though the *DT Trainer* creatively utilizes multiple prompt levels to maximize a learner's performance, it can not fully utilize errorless teaching techniques. The software provides an initial prompt level with no distracter items that could serve as an errorless prompt. However, when a student provides no response, there is no mechanism in the software to correct this situation. Similarly, when distracter items are introduced at more advanced levels, there is no mechanism to ensure that the child responds correctly each time. Because errorless approaches have demonstrated efficacy for faster rates of learning, this is a serious drawback. If the student were to use the software without adult supervision, he/she could make errors that would not be corrected. This scenario is avoided with hand-over-hand time delay 'external' prompting by a teacher or aide.

Also, one of the critical aspects associated with direct instructional, one-on-one behavioral interventions is the social relationship that develops between the teacher and the learner. The autistic child is compelled, through the intervention, to attend to social cues and contexts with repeated exposure to and contact with many different

human beings. We do not yet know the full impact of the non-specific effects of ABA interventions in incidentally remitting the social impairments associated with autism. Yet, we are willing to assume that the teaching relationship has many positive effects in socializing the learner (i.e. increased eye contact, better attending and relating, increased reciprocity, and development of joint attention).

Thus, the assumption follows that to allow a child with autism to use *only* a computer for learning would be a mistake. The *DT Trainer* would be a valuable component of a typical ABA program and would be especially helpful in providing instruction during down times when parents and teachers are otherwise occupied. The software could be used during family vacations or when staff turnover interrupts the intensity level of a child's direct instruction. Maintenance and generalization targets could be effected through the use of the computer program. However, the extent to which computer aided instruction can replace any of the prescribed 30–40 hours of direct instruction in a typical ABA program is an empirical question that remains to be answered.

The software will not be as useful for researchers or consultants. This is too bad because there are many aspects of the package that would make it appealing as a shell for researchers or consultants who work with many children, each of whom would need a different style of stimulus presentation. The package does permit the user to create new teaching programs within the discrimination formats currently offered, but this feature is not emphasized in the training materials we reviewed. The sequence of item difficulty can not be edited, although the steps in the sequence presented to the student can be varied somewhat. The prompt fading offered represents only one way to fade a prompt, using both the location of the distracters (or S-stimuli) and the size of the S-stimuli, and omitting use of stimulus intensity or external stimulus prompts completely. The delayed cue prompting procedure is not offered at all.

It is easy to learn more about the software package and for prospective customers to determine the DT Trainer's usefulness for their students. AES provides a risk free trial period for the *DT Trainer* with the caveat that the software may be an 'outstanding application' for some students and not at all useful to others. A product information compact disk is available that provides a narrated overview, similar to the PowerPoint™ training modules. However, the content provided on the informational CD can be downloaded directly from the company's web site at www.DT Trainer.com. System requirements include a Pentium 200 MHz+ CPU, CD ROM drive, 1 Gb hard drive space, video card, sound card, speakers, and recommends 96 MB of RAM (but we ran it on a 64 MB machine without difficulty). Microsoft Windows 95/98 and Internet Explorer (IE) 5.5+ is required. A touch-screen monitor would be necessary for the child who can not use or can not be trained to use a mouse.

The *Discrete Trial Trainer* is a long overdue, immensely valuable technology that will enhance the skill acquisition and learning maintenance of children with autism when used by their teachers and parents already schooled in applied behavior analysis. Though it is not a substitute for a carefully designed, systematically implemented behavioral intervention supervised by a behavior analyst, this flexible software package will compliment a child's ABA program. It may have significant value for classroom use as well.

Oh yes, one more thing should be made clear. This computer software will not create 'little robots,' but conversely, through its value as a generalization and maintenance tool, may help make a child's learning more fluent. Once behavior analysts, teachers, and parents view this software, they will join us in looking forward to its evolution and expansion.

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