



Instructional Applications of Applied Behavior Analysis for Individuals with Autism and PDD

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Applied Behavior Analysis (ABA): Definition

The process of applying sometimes tentative principles of behavior to the improvement of specific behaviors, and simultaneously evaluating whether or not any changes noted are indeed attributed to the process of application."

Baer, Wolf, & Risley, 1968, p. 91.



ABA Research Requirements:

- Must change socially important behavior
- Behavior is chosen because it needs to change, not just for research purposes
- Must address well-defined behaviors that are observable and quantifiable
- Must include clear evidence of a functional relationship between behavior and treatment (Baer, et al, 1987).



Behavioral Principles

- Appropriate and inappropriate behavior is learned as a result of environmental interactions
- Specifically, behavior is learned from antecedent and consequent events (stimuli) and can be changed by altering these stimuli



Principles continued

- A behavior followed by rewarding stimuli will likely increase in frequency or continue occurring
- A behavior previously rewarded, will cease if no longer rewarded
- A behavior followed by undesirable stimuli will decrease in frequency (Skinner, 1957; 1963)



Principles continued

- Behavior can come under the control of antecedent stimuli (Kazdin, 2001)
- Behavior can also be strengthened, weakened, or maintained as a function of observational learning (models)(Bandura, 1965)



ABA paradigm

Antecedents-->Behaviors-->Consequences

People

Desired/

Reinforcement

Events

Undesired

Extinction

Time

Response-cost

Sensory stimuli

Time out

Cues/Prompts

Aversives

Places



Instructional Applications: Discrete Trial Teaching (DTT)

- Discrete Trial Teaching (Trial by Trial, Discrete Trial Format) for instructing communication & language, social behavior, self-help skills, leisure & work skills, academic and cognitive skills (Cohen, et al, 2006; Howard et al, 2005; Lovaas, 1987; Sallows & Graupner, 2005; Smith, et al, 2000)



What is DTT?

- Systematic instructional presentation
- Teacher-directed
- One-to-one or small group
- Five steps
- Massed Trials (Drill & Practice)
- Reinforcers are contrived
- Key components: Pacing and Prompting



Applications: Milieu Teaching

- Milieu, Naturalistic, or Incidental Teaching for instruction of spontaneous language and social skills (Charlop-Christy, et al, 1999; Charlop-Christy & Carpenter, 2000; Fovel, 2002; Hart and Risley, 1975; Kaiser, et al, 1992; Koegel, et al, 1987)



What is Milieu Teaching?

- Systematic but fewer teaching trials
- Initiated by student and of interest to student
- Trials embedded in natural environment
- Reinforcers are natural and related to the motivating operation



Applications: Pivotal Response Treatment

- Used to teach behaviors that lead to more efficient skill learning such as responding to natural reinforcers and maintaining proximity to peers (Hanson & Odom, 1999; Koegel et al, 1999; Pierce & Schreibman, 1997; Stone et al, 1997;)



What is Pivotal Response Treatment?

- Teach key behaviors that lead to better acquisition of others (joint attention, symbolic play)
- Provide multiple cues (stimulus generalization)
- Focus on communication and social interaction
- Reduced repetitive behaviors



Applications: Language/Communication

- Language Instruction
 - Use DTT and Milieu Strategies
 - Verbal Behavior Training (Miguel, et al, 2005; Partingen & Sundberg, 1998; Rappaport, 1996; Sautter & LeBlanc, 2006; Sundberg & Michael, 2001)
 - Picture Exchange Communication System(PECS) (Malandraki & Okalidou, 2007; Tincani, 2004)



Language/Communication continued

- Augmentative and Alternative Communication Systems (vocal output aids, manual signs, graphic symbols) (Miranda, 2001; 2003; Sigafoos & Drasgow, 2001; Sigafoos, et al 2004)



Applications: Social Skills

- Social Skills Training of specific skills (DTT), cooperative & independent play, non-verbal interactions, emotion recognition (Naturalistic strategies) (Bernad-Ripoll, 2007; Carpenter, 2003; Charlop-Christy, et al. 2002; Lovaas, 1987; McClannahan & Krantz, 1994; Prizant & Wetherby, 1998; Shearer et al, 1996; Strain, et al, 1977, 1994)



Applications: Self-management

- Self-management strategies (Suk-Hyang et al, 2007, for a review)
 - Self-goal setting (Grossi & Heward, 1998)
 - Self-recording (Koegel, et al, 1992; Koegel & Frea, 1993)
 - Self-reinforcement (Newman, et al, 1995)



Applications: Prompting

- Prompting (Cipiani & Spooner, 1994; Alberto & Troutman, 2006, for reviews)
 - Verbal (Hourcade, 1988)
 - Self-operated verbal (Davis et al, 1992)
 - Picture guides (Kimball et al, 2003; Wolery et al, 1988; Hughs et al., 2000)
 - Video-models (Charlop-Christy et al, 2002)
 - Scripts (Krantz & McClannahan, 1993)



Prompts continued

- Physical Guidance (Rusch et al, 1988; Streifel & Wetherby, 1973;).
- Structured Environments (Marcus et al, 2000)
- Fading systems (Billingsley & Romer, 1983)



Applications continued

- Reinforcement
 - Differential (Wolf et al, 1964)
 - Intermittent (Lattel & Neef, 1996)
 - Tokens and contingency contracts (Luiselli, 1996)
 - Negative reinforcement (Moore & Edwards, 2003)



Applications continued

- Generalization and maintenance of skills and behaviors (Kazdin, 2001; Koegel et al, 1992; Koegel et al, 1999; Koegel et al, 1998; Koegel & Rincover, 1977; McGee et al, 1992; Wacker et al, 1996)



Additional ABA Applications

- Discrimination Training and Stimulus Control (Alberto & Troutman, 2006; Cuvo & Davis, 1998)
 - Curricular modifications (Kern & Dunlap, 1998)
 - Setting event modifications (Koegel et al, 1998)
 - Supported Routines (Saunders & Saunders, 1998)



Additional Applications continued

- Shaping and Chaining
- Behavioral Objectives
- Task Analysis

(See Alberto & Troutman, 2006, Cipiani & Spooner, 1994, Cooper, Heron, & Heward, 2007, for reviews)



ABA Applications for Behavior Reduction

- Functional Behavioral Assessment and Analysis (Alberto & Troutman, 2006 for review; Carr et al, 1999b; Iwata et al, 1982/1994; Wacker et al, 2007)



Application: Reductive Techniques

- Functional Communication Training (FCT) (Wacker et al, 2007)
- Antecedent manipulation (Carr et al, 1999a)
- Extinction (Iwata et al, 1990)
- Differential Reinforcement (Favell, 1973)
- Time out (Foxx, 1990)
- Response-cost (Ross, 2002)
- Aversives (Foxx, 1976)



ABA and Autism

- ABA techniques are the most studied educational interventions for individuals with ASD (NRC, 2001)
- ABA is not a therapy for autism, but a science, data-based and self-correcting (Newman, 2007)
- ABA techniques are often seen as the standard of care for individuals with ASD (Jacobson, 2000)



ABA continued

- ABA techniques have been used and studied for individuals with autism for over 40 years (Ferster, 1961; Lovaas, 1966)
- Techniques are used with all ages for a wide variety of instructional purposes (Foxx, 2007)
- Instructional techniques are well-validated with a wealth of evidence to support uses (Newsom et al, 2005).