# Discrete Trial Training

## Autism Academy 2010
## Georgia Department of Education

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# Today:

- Goals
  - Provide brief background and overview of Applied Behavior Analysis
  - Basic behavior management
  - Provide training to implement DTT
  - Learn data collection procedures
  - Learn to use data to make decisions

# Today cont ….

- Provide hands on training and performance feedback during implementation of DTT programs
- Practice data collection
- Review graphing and decision making

# Part 1

## Applied Behavior Analysis

# Applied Behavior Analysis

- Scientific study of socially relevant behaviors

  Scientific study is guided by theory and philosophy

  *Behaviorism*
- Scientific study follows a logical problem-solving process

  A method for examining variables and determining progress with respect to a given set of goals

# Behaviorism is the philosophy

- Applied Behavior Analysis

  -A method, for which behaviorism provides the theoretical underpinnings, for studying behavior of social significance, to better lives of those for whom it is utilized.

# Applied Behavior Analysis

- APPLIED: ABA focuses on the implementation of basic principles to behaviors of significance to the participants involved.
- BEHAVIORAL: ABA focuses on behavior in its own right as a target for change.

  -We change behavior in ***many*** different forms

  *Increase appropriate or educational skills

  *Decrease inappropriate or problematic skills

# Applied Behavior Analysis

- ANALYTIC: ABA seeks to identify *functional relations* between *behavior* and *environmental events* through scientific study.

  -We analyze situations so that we understand **why** behaviors are changing.
- TECHNOLOGICAL: In ABA, procedures are completely and precisely defined.

  -We are precise in our methods so we are confident in our outcomes.

# Applied Behavior Analysis

- GENERALIZED: Behavior analysts attempt to discover procedures that can be applied effectively in many settings and with many people.

  -Behavior analysts attempt to use procedures that promote generalization and maintenance of behavior change.

# Applied Behavior Analysis

- Has been called:
  - behavior modification
  - operant conditioning
  - behavioral analysis
  - consequence learning
  - etc…

# Also referred to as…

- Within the autism community, Applied Behavior Analysis has been misrepresented as being synonymous with Discrete Trial Training (DTT), Lovaas therapy, incidental teaching, pivotal response training, and other teaching procedures.

# Applied Behavior Analysis

- Diverse field
  - –Vast numbers of procedures
  - –Vastly different problems are addressed
- No single approach
  - –But common principles
- Data-based/Research proven results
  - –What we do works and we collect data to be vigilant so that we may change the things that do not work

# Part 2

## Key Terms and Principles

# Terminology

- Target behavior
- Antecedent events
- Consequent events
- Positive reinforcement
- Negative reinforcement
- Punishment

# Please remember…

- ABA is a method for studying behavior
- These principles apply to increasing appropriate behavior as well as decreasing inappropriate behaviors
- They can be relatively simple in scope
- They can be immensely complex

# Target Behavior

- Behavior of interest
- Definition
  - –Empirical
    Must be able to see the behavior to record it
  - –Use terms to describe observable events, not mentalistic constructs
    Can't see "feelings"
    Can't observe "states of mind"

# Target Behavior

- We need to define very precisely

- Precise definitions of terms and procedures lead to:
  - Accurate data collection which leads to…
  - Reliable measurement which leads to…
  - Confidence in clinical and educational decision making

# Target Behavior

- Very simple behaviors can be difficult to define
- “Stranger Test”

  A description of behavior should be precise or descriptive enough so that a stranger could observe and determine if the response was or was not being demonstrated.
- “Dead Man’s Test”

  Goals should convey what a child **will do**, not what a child will not do. If a dead man can meet the goal, it does not pass the test.

# Target Behavior

- Acquisition
  The desired response
- Behavior management
- Examples:

# Examples:

Bad: “loses control”

Better: “cries and tantrums”

Best: “cries and sobs, flops to the floor, kicks, pounds objects/fist on the floor, all of which is defined as a tantrum”

# Examples:

Bad: “doesn’t listen”

Better: “does not do what she is told”

Best: “does not initiate compliance within 10 seconds of a staff request”

# Antecedents

- Antecedents are things that occur prior to a target behavior (events that precede a behavior in time)
- Antecedents can help determine and control why a behavior is occurring
- If used consistently, can reliable predict a behavior

# Antecedents

- Antecedents can make behaviors occur
  - –Occasion, set up, trigger
- There is always an antecedent
- Understanding antecedents can lead to behavior management and effective acquisition of skills

# Antecedents in behavior management

- Present a non-preferred work demand
  *could precede aggression

- Take away a preferred toy
  *could precede crying

# Antecedents in skill acquisition

- Skill acquisition to teach new skills
  -Present a cue, child responds, consequence follows

- Present some "cue" to the child
  -This will serve as the antecedent to the child's response
  -This cue will serve as a reliable predictor that a certain behavior, when demonstrated, will lead to the delivery of a preferred stimulus

# Antecedents

- A cue will serve as a stimulus that "discriminates for" preferred items if a certain behavior is demonstrated

  If Johnny hears "touch blue" when a blue block and a red block are present:

  touching blue will lead to a preferred item;

  touching red will not

"Touch blue" is a cue that a certain response leads to a certain consequence

# Antecedents

- That type of antecedent event or “cue” has a technical name

  Discriminative Stimulus or “Sd”

  An Sd is used to provide a child with information about which response leads to reinforcement in the presence of which item

  An Sd can be verbal, pictorial, visual, or tangible

# Consequences

- Consequences are things that occur following a target behavior (events that follow a behavior in time)
- Consequences can make behavior more or less likely to occur in the future
- Can include anything and everything that could possible occur following a target behavior

# Consequences

- Can make behaviors
  - Increase
  - Decrease
  - Stay the same
- There is always a consequence
- Understanding consequences can lead to effective behavior management and skill acquisition

# Consequences in behavior management

- Joey hits the teacher which produces…
- Joey tantrums during meals which leads to…
- Joey puts everything in his mouth which leads to…
- Joey hits Johnny and Johnny walks away which gives Joey…
- Joey cries loudly in the check-out line at Wal-Mart which leads to…

# Consequences in skill acquisition

- After an Sd is followed by a response from a child, a teacher can deliver a consequence
  - praise
  - preferred items
  - preferred activity
  - corrective response
  - additional prompting
- Different consequences can have different effects on behavior

# A-B-C

- Antecedents -Behaviors-Consequences
- All behaviors comply to the model
- A's and C's affect future behavior
  - -some interactions increase behavior
  - -some interactions decrease behavior

# Positive Reinforcement

- The addition of some stimulus condition following a behavior which results in the increase of that behavior in the future.
- The addition – POSITIVE
- Increase – REINFORCEMENT
- Positive reinforcement is defined by it's effect on behavior

# Positive Reinforcement

- George points to the truck when he hears "point to truck"

  Receives praise, hugs, high 5's

  Continues to point to correct stimulus when presented in the future
- George does not point to truck anymore

  Was not positive reinforcement

**Again, defined by it's effect on behavior

# Positive Reinforcement

- Jake hits another child
  You yell at him.
  *He hits more….what does that mean?

- Positive – add something
- Reinforcement – behavior increases in the future

# Positive Reinforcement

- Behaviors are reinforced
- Kids are not!!
- “Reinforcers” are those stimuli, that when provided contingent on a target behavior, increase that target behavior.

# Negative Reinforcement

- The removal or termination of some stimulus condition following a behavior which results in the increase in that behavior in the future

- The removal – NEGATIVE
- Increase – REINFORCEMENT
- Defined by it's effect on behavior

# Negative Reinforcment

- Chris is having a tantrum – you give him a break from work
  - A tantrum is more likely to occur in the future (negative reinforcement)
  - A tantrum does not occur again (was not negative reinforcement)
- Defined by it's effect (increase) on behavior

# Negative Reinforcement

- Raining – open umbrella – removes rain

- Common stimuli that serve as reinforcers:
  breaks, changes in activity, work removal, avoiding social conflict, avoiding certain situations

# Reinforcement vs. Punishment

- Reinforcement increases behavior
- Punishment decreases behavior
- Addition (positive) or removal (negative) of a stimulus condition that results in the decrease in that behavior in the future
  - *positive punishment
  - *negative punishment

# Reinforcement

Some things to think about:

-immediate

-contingent

-varied

-satiation/deprivation

-reinforcing for that individual

# Reinforcement

- readily available
- easily consumable
- age appropriate
- fade to natural reinforcement as soon as possible
- provide behavior specific praise
- unpredictable and novel

# Choosing reinforcers:

- Reinforcer assessment
  - Ask parents
  - Observe
  - Ask the student!!
- Allow choice
  - Paired choice
  - “Box of tricks”

# Reinforcement ?

- How long should he have access?
  - short amounts of time relative to work time
  - usually recommended – 20 seconds or time to consume
- Should he choose after each trial or at the beginning of the session?
  - You choose, but be consistent.

# Reinforcement ?

- Should he/she be able to access these items during free play time?
  - No, to avoid satiation, these items should only be available contingent on task completion.
- Do we have to use the same reinforcer for each compliance/long term?
  - Let the data determine this.
  - Is the response increasing?

# Part 3

## Prompting Strategies

# Why use prompting strategies?

- Lease to most intrusive prompt hierarchy
- Always gives a chance for compliance
- Always prevents escape
- Students learn to comply earlier and earlier in the sequence
- Must follow through every time

# Prompts

- Prompts
  - –Many different kinds of prompts
  - –Prompts assist learner through providing more information or move the goal within reach
    - Placement
    - Visual
    - Verbal Prompt
    - Position

# Prompting Sequence Components

- Obtain or maintain attention
  Important (especially for new skills)
  "Look at me"
  Physically guide
  For some children, attention can be gained without eye contact.
- Give instruction (deliver cue)
  "Do this." "Point to _____." "Match."
- Response
  5 second average wait time (can vary depending on the student)
  Determine what you will count as correct/incorrect
- Consequence
  -Following prompting hierarchy
  -Provide reinforcement

# Prompting Sequence Components

- No response within 5 seconds or incorrect responses are followed by following through with prompting hierarchies
- Correct responses are immediately followed by reinforcement
  - access to items
  - praise
  - primary reinforcers
  - tokens

# Today's prompting strategy…

Errorless Learning Prompting Sequence

- Verbal
- Gestural/model
- Physical

- AKA …3 step prompting
- Tell – Show – Do

# Verbal prompting

- Tasks require a verbal prompt

Different kinds of verbal prompts:

- Partial verbal response (“r” for “red”)
  - -deliver small amount of reinforcer
- Provide full model (“It’s red.” “Say red.”)

# Gesture/Model Prompts to Physical Prompt

- Deliver verbal prompts (“Sit down.”)

  **wait 5 seconds**
- Repeat verbal as a gesture/model is provided (“Sit down.. like this.”/while sitting then standing again)

  **wait 5 seconds**
- Physical Guidance (“Sit down.”/while physically guiding the child to the seat)

# Part 4

## Discrete Trial Training/Teaching

# Discrete Trial Training/Teaching

- This is a style of teaching in which opportunities to respond (trials) are presented one at a time (discretely) so that the specific components are discernable to the learner, and so that an accurate recording of the learner's responses can be made.
- Most likely, you already use some form of this style of teaching.
- DTT emphasizes many commonly used techniques to produce a very powerful method of increasing skills.

# Discrete Trial Training

- Discrete trial – small unit of instruction (usually) implemented in a 1:1 environment
- The most widely studied approach for teaching children with autism
- Surgeon general endorses DTT for children with autism

# DTT Terms

- Trial
  - one individual learning sequence
- Session
  - several trials
- Program
  - one objective achieved through running multiple sessions

# Benefits of DTT

- Obvious start and finish to each trial
- Tasks initially short then
- Motivation through reinforcement
- Stimulus control: clear, consistent, repetitive, less confusion
- Teaches new forms of behavior
- Teaches discrimination
- Promotes generalization since generalization can be directly addressed through different settings and situations (table top, small group, playground, anywhere)

# DTT Components

- Obtain attention (Very important)
- Deliver Sd (give instruction)
- Response
- Consequence
- Intertrial Interval

# Instruction

- Present a clear, simple instruction or question
- Present only one instruction at a time (until ready to chain)
- Prompts can be used simultaneously or immediately following the instruction to assist with error correction (if needed)
- Sd for each program will be different
- Consistency is the key – use the EXACT wording each and every time to avoid issues with acquisition and data collection

# Response

- Following the Sd, the child will do something or not do something
- 5 seconds average wait time
- Correct or incorrect response is given
- Determine if correct/incorrect
- Either reinforce (immediately) or move through prompting sequence (corrective feedback)

# Intertrial Intervals

- Time between the end of one trial and the onset of the next trial
- Reinforcer consumption
- Prepare for next trial
- Data collection

# What if programs are not working?

- The process to teach new behaviors can sometimes be very long
- We can set a number of sessions (or days) as a limit before looking at modifying a program
- Persistence is the key
- Can break the task into smaller units
- Is everyone teaching the same way?

# Items of importance:

- Use short, simple instructions
- Evaluate response as correct/incorrect
- Prompt
- Reinforce immediately
- Record data

# Limitations:

- Prompt dependency
- Generalization must be programmed
- Labor intensive

# DTT Training Protocol:

- Goal/criteria for mastery
- Materials needed
- Sd
- Definition of correct response (target behavior)
- Prompting procedure
- Steps for training

# More important points…

- Always praise and/or otherwise reinforce correct responses (Even if it is something expected, others can learn from seeing others get reinforced.)
- Always give at least 5 seconds for the student to respond.
- Always plan out delivery before you start.
  -eliminates down time
  -get materials, know how many trials, seating arrangement
- Always ignore inappropriate behavior
  -Focus on the task
  -No verbal comments
  -Do not allow escape
- Keep task moving until complete
- Make yourself a reinforcing stimulus
- Try to end on a good note

# Part 5

## Generalization and Maintenance

# Generalization

When correct responses occur when stimuli are different than in training:

- Across people
- Across materials
- Across environments
- Across time
- Across responses

# Generalization

- How might you plan for generalization?
- Can it happen on its own?
- After a skill is mastered with one set of stimuli present
  - run sessions with different people
  - in different areas
  - at different times

# Maintenance

- Maintenance is when correct responding persists without reinforcement in place
- Programming periodical review of mastered objectives
- If the behavior falls back to below 80% across 3 (or 5) consecutive sessions, put back into acquisition programming

# Part 6

## Data Collection

# Why we collect and graph data:

- Baseline
- Treatment comparisons
- To monitor whether or not an intervention is working
- To monitor skill acquisition
- To monitor behavior
- To make changes to existing programs

# Data Collection

- There are several different data collection systems
- Different systems are used to most effectively record relevant information about a behavior
  - duration
  - frequency
  - interval

# Data Collection

- We are going to focus on 1!!!
- All correct responses must be operationally defined
- Baseline
  - -measurement of skill prior to intervention
  - -collect 3-5 baseline data points

# Intervention or Treatment Phase

- Daily session data is monitored to evaluate progress, check for mastery, check for skill decrease
- Data should drive all programming decisions

# Data Collection

- Generally, a response will be recorded for each trial
- A + will be used to record a correct/incorrect response
- Record the type of prompting used to correct the response
- V = verbal; M/G = model/gesture; P = physical

# Your data sheet:

- Child's name
- Program
- Date
- Session number – specific to the program
- Therapist
- Trial
- Criteria for Mastery
- Score
- Total correct
- Percentage correct (to be graphed)

# Graphs

- Visual aid in decision making
  - –trend (increase or decrease)
  - –variability
  - –accountability
- Make decisions about:
  - –mastery of skill
  - –moving to a new step (criteria)
  - –moving a program to maintenance

# Finally…

- Seek supervision
- Ask questions
- This can be a hugely complex undertaking
- Not expected to be perfect right away
- Everyone goes through a learning/comfort curve
- Practice with your team to make sure you are all on the same page
- It is ok to make mistakes
- Be consistent and organized

# Part 6

## Practice and Role Play

# Resources


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# Resources


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