Principles of Applied Behavior Analysis:

Evidence-Based Early Intervention Teaching Practices

Day 1

Applied Behavior Analysis

- ABA is a discipline devoted to the understanding and improvement of human behavior.
- ABA focuses on objectively defined, observable behavior of social significance, and seeks to improve the behavior while demonstrating a reliable relationship between the procedures employed and the behavioral improvement.

(Cooper and Heward, 1987)

Some Applications of ABA

- Discrete Trial Training
- Pivotal Response Treatment
- Incidental Teaching
- Applied Verbal Behavior

Focus on Teaching Techniques

- Instructional strategies to increase behavior is the focus of this session
- ABA can be applied to identify the function of challenging behaviors and strategies to increase alternative behaviors.
- This introduction to and application of ABA principles will be focused on increasing children's skill acquisition

Evidence Based Practices

Practices that are informed by research in which the characteristics and consequences of environmental variables are empirically established and the relationship directly informs what a practitioner can do to produce a desired outcome.

- *Dunst, Trivette, and Cupsek (2002)*

Evidence-Based Practices…

have research documenting their effectiveness

- Evaluated in a peer-reviewed journal
- Replicated across investigators, settings, and participants
- Shown to produce outcomes like the ones intended

- Strain & Dunlap

7 Dimensions of ABA

1. Applied… The intervention is designed to have a meaningful, positive impact on the life of the child.
2. Behavioral…The goal can be directly observed and measured. The objective is defined so clearly that different people can measure the behavior in the same way.
3. Analytic… Data shows that the intervention is responsible for the improvement in behavior.

Dimensions cont'd

4. Conceptual… Interventions utilize research-based behavioral teaching strategies

5. Technological…The teaching procedures are written so explicitly that different individuals can implement them in the same manner.

6. Effective…The intervention results in significant improvements in behavior.

7. Generality…The skills learned can be maintained over time and utilized in different settings and contexts.

Behavior- what is involved

When we emit a behavior what factors are in place?

Shout out some behaviors that we do everyday…

ABA basics in action

Thinking about any behavior

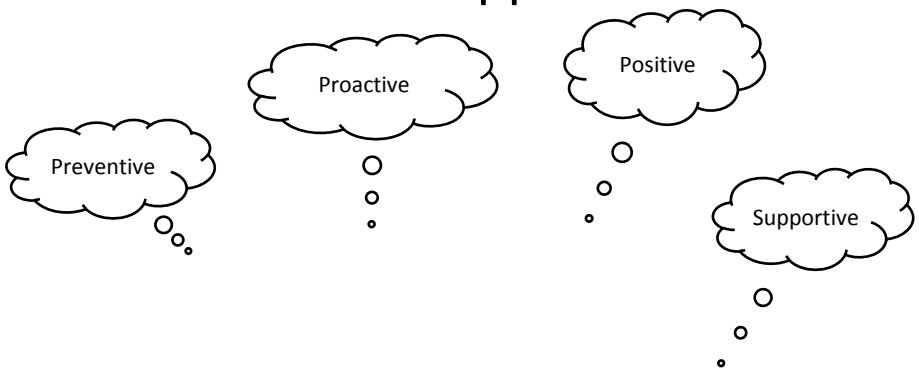
- Motivation
- Initiation
- Cue/expectation
- Result/response

ABA basics in action

Thinking about any behavior

- Motivation (how will we increase)
- Initiation (how will we encourage first step in chain of events)
- Cue/expectation (how will we set stage for response)
- Result/response (what will we do to **make life better** as a result of behavior ie improving conditions)

Instructional approach is…



POSITIVE BEHAVIORAL SUPPORTS

Components of Teaching

A-B-C

Behavior

- Definition
- Operationalizing a target behavior
- Selecting and defining a target behavior- a skill or a developmental goal

2 Types of Consequences

Reinforcement **Punishment**

Reinforcement

- A type of consequence - occurs after the behavior.
- Increases the likelihood of the same behavior occurring in the future under similar conditions.
- We only know if an intended reinforcer is truly a reinforcer by observing future behavior.

Reinforcement

- **Positive reinforcement**: Something is *added* that *increases* the likelihood of the behavior occurring again.

- **Negative reinforcement**: Something is *taken away* that *increases* the likelihood of the behavior occurring again.

Punishment

- A type of consequence - occurs after the behavior.

- Decreases the likelihood of the same behavior occurring in the future under similar conditions.

- We only know if an intended punisher is truly a punisher by observing future behavior.

Punishment

- **Positive punishment**: Something is *added* that *decreases* the likelihood of the behavior occurring again.

- **Negative punishment**: Something is *taken away* that *decreases* the likelihood of the behavior occurring again.

It is important to note that negative reinforcement is not the same as punishment. The difference between the two is that negative reinforcement is used to increase the target behavior, whereas punishment is used to decrease a behavior.

Small Group Activity

Read your scenario and label the Antecedent, Behavior and Consequence.

Determine if your scenario is an example of Positive Reinforcement or Negative Reinforcement.

Create a new example of reinforcement. If your scenario was Positive Reinforcement, then create an example of Negative Reinforcement.

Be prepared to share with the group.

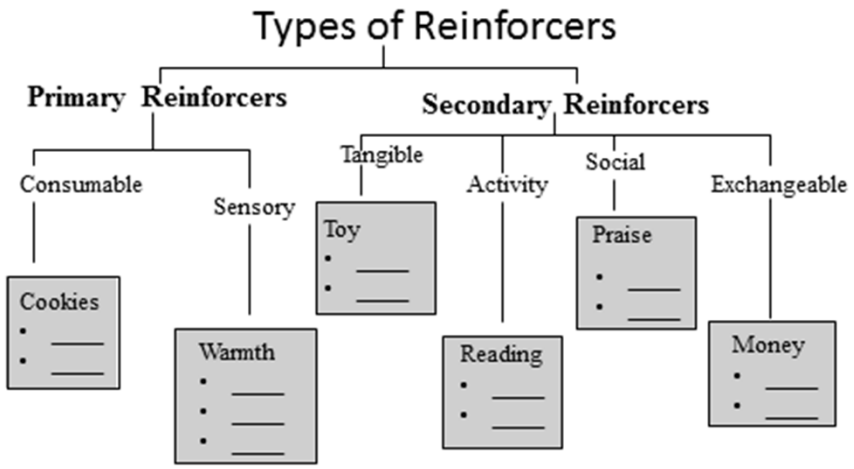
"Positive reinforcement is the most important and most widely applied principle of behavior analysis."

Cooper, Heron and Heward (2007, p.257)

Types of Reinforcers

Primary reinforcers satisfy a physical need by making the individual feel good (e.g., food, liquids, sleep).

Secondary reinforcers are objects or activities that individuals have grown to like, but that do not meet basic biological needs.



Natural reinforcers are ordinary results of a behavior and occur naturally in the environment.

EXAMPLES: getting milk after asking for it, and having more friends as a result of good social skills

Motivation

- Changes from day to day, moment to moment, it can change quickly
- Alters the value of reinforcement
- Varies considerably from child to child

How do we know what is reinforcing for an individual?

Reinforcers can be identified by:

- Conducting reinforcer/preference assessments;
- Creating preference lists (e.g., reinforcer checklists, reinforcer menus)
- Interviewing the learner
- Interviewing family members
- Interviewing other teachers/practitioners

Basic principles for implementing reinforcement

•Reinforce immediately following the target behavior.

•Reinforcement must fit the target behavior and be meaningful to the learner.

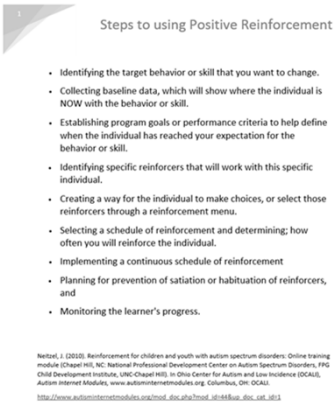
•Multiple reinforcers are more effective than a single reinforcer (Alberto & Troutman, 2008).

Monitoring Progress

- Frequency Count
- Logs
- Simple Checklists
- Task Analysis
- Permanent Product
- Matrix

Additional Resources

Handout 1



Steps to using Positive Reinforcement

- Identifying the target behavior or skill that you want to change.
- Collecting baseline data, which will show where the individual is NOW with the behavior or skill.
- Establishing program goals or performance criteria to help define when the individual has reached your expectation for the behavior or skill.
- Identifying specific reinforcers that will work with this specific individual.
- Creating a way for the individual to make choices, or select those reinforcers through a reinforcement menu.
- Selecting a schedule of reinforcement and determining; how often you will reinforce the individual.
- Implementing a continuous schedule of reinforcement
- Planning for prevention of satiation or habituation of reinforcers, and
- Monitoring the learner's progress.

Neitzel, J. (2010). Reinforcement for children and youth with autism spectrum disorders: Online training module (Chapel Hill, NC: National Professional Development Center on Autism Spectrum Disorders, FPG Child Development Institute, UNC-Chapel Hill). In Ohio Center for Autism and Low Incidence (OCALI), *Autism Internet Modules*. www.autisminternetmodules.org. Columbus, OH: OCALI.

http://www.autisminternetmodules.org/mod_doc.php?mod_id=44&up_doc_cat_id=1

http://www.autisminternetmodules.org/mod_doc.php?mod_id=44&up_doc_cat_id=1

Components of Teaching

A-B-C

Antecedent based Intervention Strategies

- Positive Reinforcement
- Task Analysis/Chaining
- Prompting/Fading Procedure
- Shaping
- Modeling/Request Imitation

Task Analysis

- the process of breaking a skill down into smaller, more manageable steps in order to teach a targeted skill.
- as the smaller steps are mastered, the learner becomes increasingly independent in his or her ability to perform the larger skill.
- can be used in a number of settings, including: school, community and home
- can be used for a variety of behaviors

AIM - Task Analysis

Task Analysis:
Step-by-Step Instructions

1. Identify the target skill
2. Break the skill into components
3. Confirm the steps
4. Determine how the skill will be taught
5. Implement the intervention and monitor progress

AIM - Task Analysis

http://www.autisminternetmodules.org/mod_doc.php?mod_id=48&up_doc_cat_id=1

Step 1: Identify the target skill

- Use the learner's **Individual Education Plan** (**IEP**)/**Individual Family Service Plan** (**IFSP**) goals.
- The target skill should consist of a series of chained discrete steps.
  - A single independent skill is not appropriate for task analysis

Step 2: Break the skill into parts

Break up the target skill into more manageable parts by:

- **Completing the skill yourself and recording each step, or**
- **Observe another person (in real time or via video) complete the activity and record the steps**

Confirm that each part consists of a single, individual skill.

Step 3:
Confirm the steps

Have someone else follow the steps exactly to perform the skill.

Activity

Task Analysis:
Step-by-Step Instructions

1. Identify the target skill - Brushing Teeth
2. Break the skill into components
   - list on a sheet of paper
   - be prepared to share with group

Step 4:
Determine how the skill will be taught

- A backward chain
- A forward chain
- A total task

Backward Chaining

- Steps at the end of the behavioral chain are mastered first.
- Assistance provided through the initial steps of the task analysis until the learner gets to the last step.
- On the last step the instructor prompts the learner to perform the step, and then reinforces the learner.
- After the last step in the task analysis is mastered, each previous step in the chain is added one at a time.
- Advantage: targeted skill leads immediately to reinforcement.

Forward Chaining

- Teach and reinforce the initial steps in the chain first.
- Begin with the first step in the chain that the learner needs to learn and then works forward through the task analysis.
- Guide the learner through the remaining steps of the task analysis

AIM - Task Analysis

Total Task Presentation

- a variation of Forward Chaining
- the learner receives training on each step in the task analysis during every session
- assistance is provided with any step the learner is unable to perform independently
- chain is trained until the learner is able to perform all of the steps in the sequence

Cooper, Heron and Heward (2007, p.442)

Step 5:

Implement the intervention and monitor progress

1.24 Task Analysis

Task Analysis

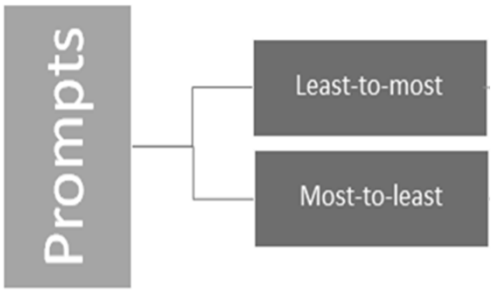
Washing Hands	6/8	6/14	6/18	
1. Turn on water		√	√	
2. Hands wet	√	√	√	
3. Soap on hands			√	
4. Rub together				
5. Rinse hands	√	√	√	
6. Water off		√	√	
7. Dry hands				
Percentage correct	29%	57%	71%	

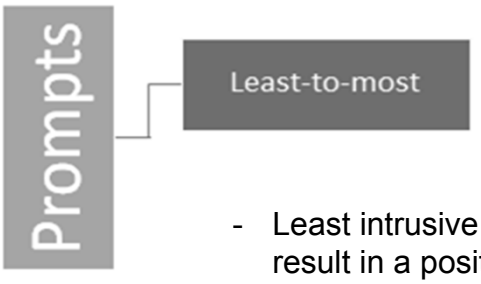
Prompting/Fading Procedure

Teaching skills and behaviors by providing prompts or cues but then fading out the intensity of the prompts as soon as possible to promote independent responding.

Leach, 2012 p. 74

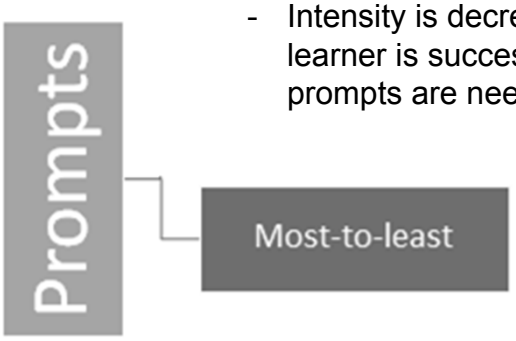
Two ways to systematically use prompts:



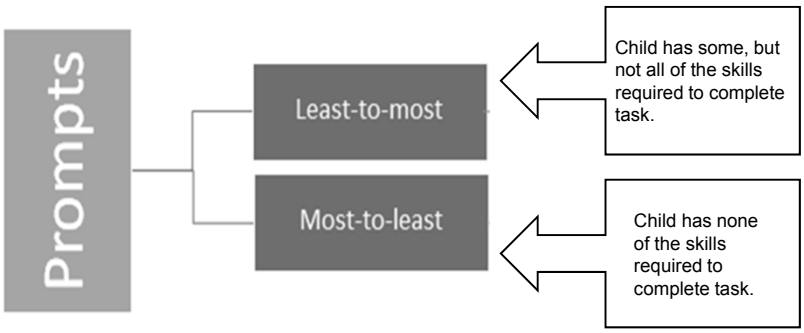


- Least intrusive prompt that will likely result in a positive response
- Intensity is increased if the learner does not respond
- Intensity is decreased if the learner is successful until no prompts are needed

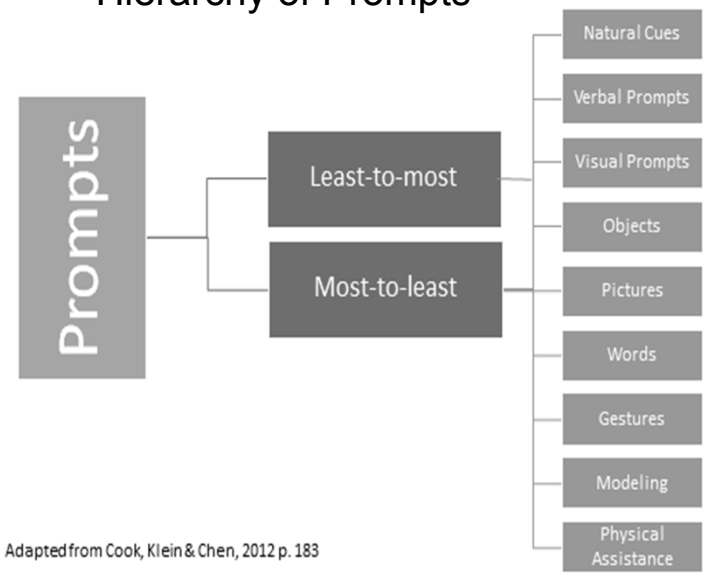
- Begin with intensive prompting to ensure success
- Intensity is decreased if the learner is successful until no prompts are needed



How do you decide?



Hierarchy of Prompts



Adapted from Cook, Klein & Chen, 2012 p. 183

Tips for Using Prompts Effectively

Prompts should be as minimal as possible.

Prompts should be faded as quickly as possible

Frequent opportunities need to be available

Shaping

Positively reinforcing successive approximations of a desired behavior

(Cooper, Heron, & Herod, 2007)

Using shaping procedures allows caregivers to set small goals so that children can easily learn the required skills, which helps to reduce anxiety and increase motivation.

(Leach, 2012)

Modeling/Request Imitation

Demonstrate what the child is expected to do, provide an opportunity for the child to imitate, and provide immediate feedback.

Leach, 2012 p. 90

Many times caregivers immediately prompt a child to engage in a certain behavior using verbal or physical prompts without first demonstrating what it is they would like the child to do.

References

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Cook, R.E., Klein, M. D., & Chen, D. (2012). Adapting early childhood curricula for children with special needs (8th ed.) Boston, MA: Pearson.

Cooper J.O, Heron T.E, Heward W.L. (2007). Applied behavior analysis (2nd ed.) Upper Saddle River, NJ: Pearson.

Leach, D. (2012). Bringing ABA to home, school, and play for young children with autism spectrum disorders and other disabilities. Baltimore, MD: Paul H.Brookes Publishing Co.