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# Discrete Trial Training: What It Is and How Can I Use It When Working with Children?

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## Course Objectives

Describe at least three reasons to use discrete trial training within their pediatric practice.

Identify at least three components of a discrete trial.

Differentiate the process of prompting from providing error correction when given a case example from this course.

When given a skill to teach, the participant will be able to identify at least 3 steps for teaching the skill using a discrete trial.

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## Outline

- ▶ Review of autism spectrum disorders
- ▶ What is a discrete trial training (DTT)?
- ▶ Why use DTT?
- ▶ Process for implementing DTT

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## Autism Spectrum Disorder (ASD)

- Life-long
- Core deficits
  - Social communication
  - Overall adaptive functioning
- Usually evident during the first three years of life
- Symptoms range from mild to severe

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## Causes

- Uncertain
- Possibility of multiple causes
- Genetic influence
- “Two Hit” Theory

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## Prevalence

- 1 in 68 children
- 5:1 boys to girls
- Distributed throughout the world in all races, nationalities, and social classes
- More common than pediatric cancer, diabetes and AIDS combined

(Centers for Disease Control and Prevention, 2012)

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## Social Deficits

- May prefer to be alone
- Difficulty with relationships
- Difficulty understanding social rules of the school
- Socially naïve
- Difficulty imitating actions of others and learning through observation

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## Learning Deficits

- Problem solving
- Organizational skills
- Generalization
- Discrepancy in learning

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## Behavioral Deficits

- Change and transitions
- Easily frustrated
- Low motivation to do because “I said so”
- Self-monitoring
- Pre-occupation with certain items, routines, or rituals

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## Communication Deficits

- Non-verbal communication
- Expressing themselves
- Asking for help
- Asking for a break
- Verbal directions

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## Strengths

- Memory
- Visual learners
- Black and white thinking
- Straightforward, honest, objective
- Focus on topics of interest

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## Discrete Trial Training (DTT)

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## Why do we need to look at other approaches?

- ▶ Difficulty with multi step activities
- ▶ Difficulty with generalization (need for consistency across people)
- ▶ We have to teach critical skills!

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## What is a discrete trial?

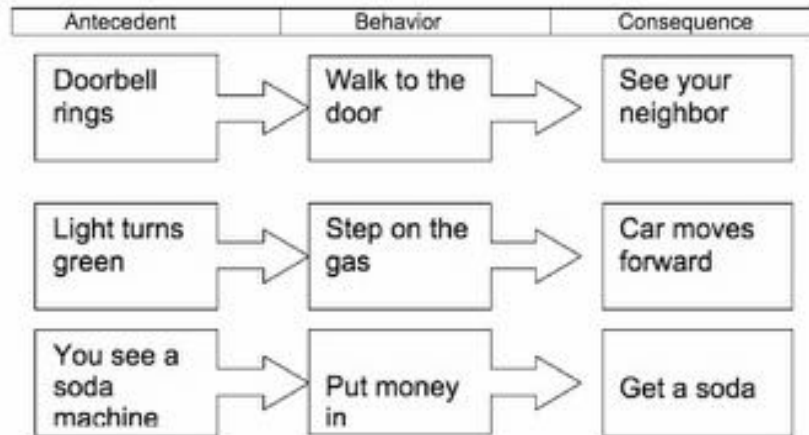
- ▶ 1:1 instructional approach
- ▶ Planned, controlled and systematic manner
- ▶ Has a definite beginning and ending
- ▶ Reinforcement to increase desired behavior
- ▶ Data driven

(Bogin, 2008)

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## Three term contingency (ABC)



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## DTT and ABA

**“DTT is a commonly misused term and is quite often thought to be synonymous with applied behavior analysis (ABA) and vice-versa. As mentioned previously, ABA refers to the science of learning principles to teach or alter behavior that will improve one's quality of life. DTT embodies those teaching approaches but is just one method (using **massed trials** and **didactic instruction**) within the umbrella of ABA to impact behavior”**

•[www.autisminternetmodules.com](http://www.autisminternetmodules.com)

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## When should I use discrete trials?

- ▶ Child is having difficulty learning a skill
- ▶ Child has difficulty following directions
- ▶ Child has difficulty generalizing a skill
- ▶ Child gets frustrated with tasks and/or when you attempt to correct

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## Why is DTT effective?

- Errorless teaching – child is prompted to get correct, therefore increasing compliance and reinforcement
- Skill is taught in a consistent and systematic way (consistency good for child and adult)
- Child gets immediate feedback
- Gain better understanding of child's skill level
- Data based decisions are made

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## The process

1. Decide what to teach
2. Determine type of data to take
3. Determine location
4. Gather materials
5. Implement
6. Review the data

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## Case Study

- Working with a 3 year old boy with autism and he has difficulty with gross motor movements. Because he cannot imitate, he has difficulty playing with peers or siblings. His parents would really like for him to participate in some type of gymnastics class or Gymboree with peers.

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## 1. Decide what to teach

- ▶ What is interfering with daily function at home, school, or community?
- ▶ What limits their ability to be around peers?
- ▶ What appears to be deficits that are linked to challenging behavior?

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## Helpful resources

- *Teaching Developmentally Disabled Learners: The Me Book* (Lovaas, 1981)
- *Teaching Individuals with Developmental Delays* (Lovaas, 2002)
- *A Work in Progress* (Leaf & McEachin, 1999)
- *Behavioral Intervention for Young Learners with Autism* (Maurice, Green, & Luce, 1996)
- *Assessment of Basic Learning and Language Skills* (Partington & Sundberg, 1998)
- [www.autisminternetmodules.com](http://www.autisminternetmodules.com)

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## Possible physical therapy examples

- ▶ Identifying body parts
- ▶ Following directions
- ▶ Gross motor imitation
- ▶ Self-help skills
- ▶ Vocational skills
- ▶ Play skills

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## Task analysis

- Break down the skills into small, teachable steps
- Create sets that are easier to take data on
  - Example: Instead of saying “will learn entire alphabet” say “will learn a set of five letters”

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**Target objective for a 4 year old:** When looking at a book with an adult, Steffie will answer the adult's question "What's that?", accompanied by a point to a picture, by naming 10 or more different pictures of animals and vehicles in five different unfamiliar books, during 90% of opportunities across three consecutive teaching sessions.

[www.autisminternetmodules.com](http://www.autisminternetmodules.com)

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#### **Steps/Lesson Progression**

1. Names 2-3 animal pictures with partial verbal prompt
2. Names 2-3 animal pictures independently
3. Expressively identify 2-3 animal pictures in one familiar book
4. Expressively identify 4-5 animal pictures on cards
5. Names 4-5 animal pictures in five different books
6. Names 2-3 vehicle pictures with partial verbal prompt
7. Names 2-3 vehicle pictures independently
8. Names 2-3 vehicle pictures in one familiar book
9. Names 4-5 vehicle pictures on cards
10. Names 4-5 vehicle pictures in five different books

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## Case study

1. Imitate set of three gross motor movements (clap hands, arms up, pat legs).
2. Imitate an additional set of three gross motor movements (standing on one foot, jumping with both feet, hopping on one foot).
3. Imitate six movements from a peer
4. Imitate six movements in a small group

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## 2. Determine how to take data on the skill

- ▶ Baseline data
- ▶ Format

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## Data sheets

Daily:

- ▶ Place to document the prompt level (help)
- ▶ Mastery criteria
- ▶ Dates (data and mastery)

## Graphing sheets

## Summary sheet

### Other comments

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[illegible]

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[illegible]

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## Case Study - Data

### Criteria – 90% over 3 different days

Set	Accuracy	Prompts
1	+++++	Full Physical prompt
1	+++++	Partial physical prompt
1	+++++	Independent

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### 3. Deciding location

- A quiet place without too many distractions,
  - Sufficient space for instruction and for breaks,
  - Easy access to peers for **generalization**, and
  - Adequate lighting and seating (seat and table that fits the learner's body, with feet and back supported by the chair and hips, knees, ankles, and elbows at 90 degrees).
- 
- [www.autisminternetmodules.com](http://www.autisminternetmodules.com)

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### Case Study

- Start in 1:1 setting (possibly therapy room) or quiet place in home/classroom
- Gradually move to busier areas
- Finally practice in the gym class(supporting instructor on how to implement)

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## 4. Gather materials

- ▶ Items needed for task
- ▶ Data sheets
- ▶ Reinforcers
- ▶ Visual supports
- ▶ Timers

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## Case Study

- Items needed for task - no items needed
- Data sheets
- Reinforcers – ipad and reinforcer board
- Visual supports – Visual schedule to show the activities
- Timers –timer to indicate when ipad is finished

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## 4. Implement DTT

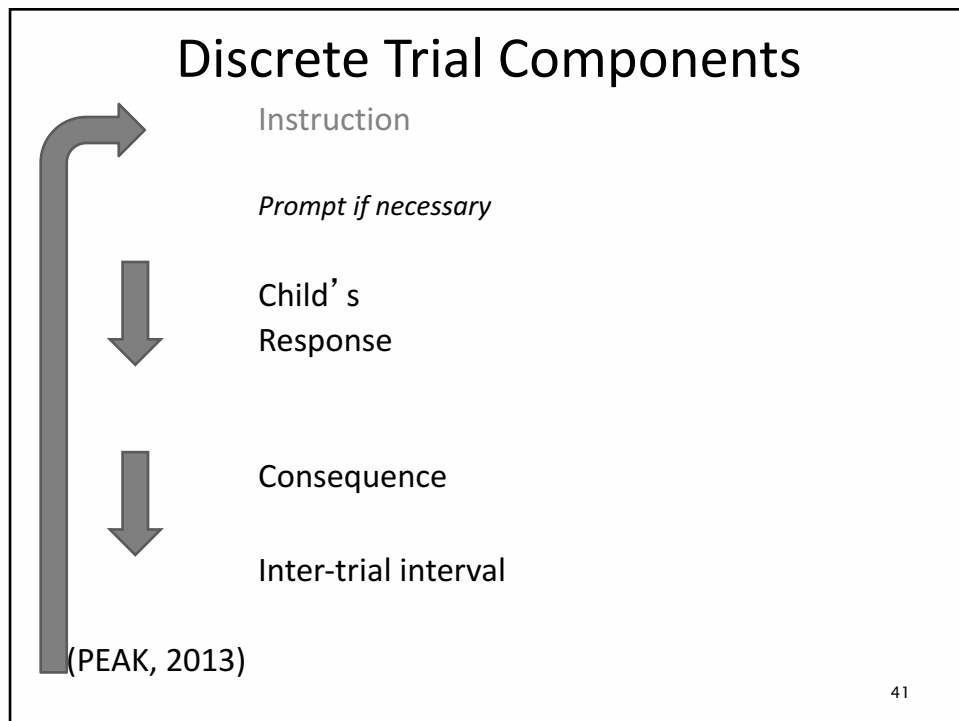
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## Components of Discrete Trial

1. Instructional cue
2. Prompt if necessary
3. Child's response
4. Consequence
5. Inter-trial interval

(Bogin, Sullivan, & Rogers, 2011)

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## The Instruction

- Any event in the environment that cues the child that a response is required.
- It does not have to be verbal.
- Tips:
  - Keep concise
  - Present when child is paying attention
  - Give 3-5 seconds to respond

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## Case Study

**Instruction**

**"Do this" and perform the gross motor action**

Prompt (if needed)

Behavior

Consequence

Inter-trial interval

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## Discrete Trial Components

Instruction

*Prompt if necessary*

Child's  
Response

Consequence

Inter-trial interval

(PEAK, 2013)

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## Prompt

- Any assistance given to successfully complete a task.
- The goal is to choose a prompt with the least amount of support to facilitate a correct response.
- Prompts occur BEFORE the child responds.
- Prompts should be faded systematically.
- Use prompts judiciously.

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## Why do we want to minimize errors?

- ▶ Can waste learning time.
- ▶ Tend to be repeated.
- ▶ Are often accompanied by problem behaviors.
- ▶ Decrease opportunities for reinforcement.
- ▶ Decrease self-confidence.
- ▶ Decrease motivation.

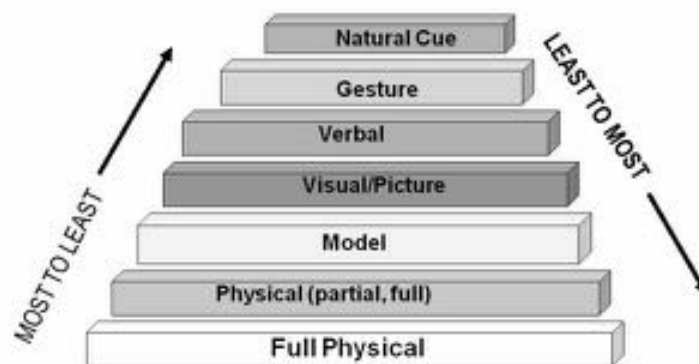
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## Types of prompts

- Physical (full, partial)
- Verbal
- Visual
- Gestural
- Environmental

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### Prompting Hierarchy



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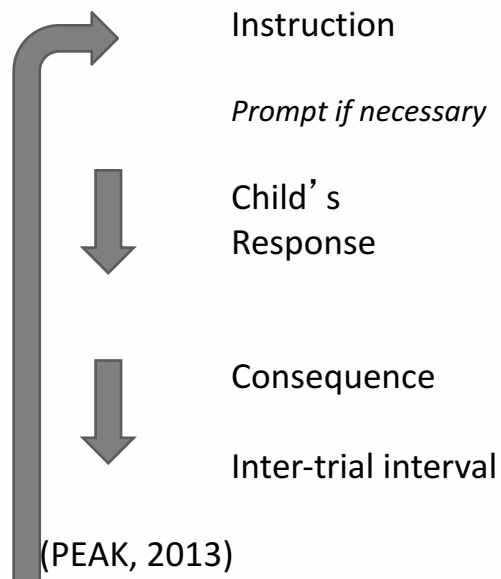


## Case Study

Instruction	"Do this" and perform the gross motor action
Prompt (if needed)	Physical prompt
Behavior	
Consequence	
Inter-trial interval	

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## Discrete Trial Components



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## Child's Response

- What he/she does after the instruction.
- Responses show:
  - Independent correct: responds correctly with no prompts
  - Prompted correct: responds correctly w/ a prompt
  - Error: responds incorrectly without a prompt
  - No response: does not respond

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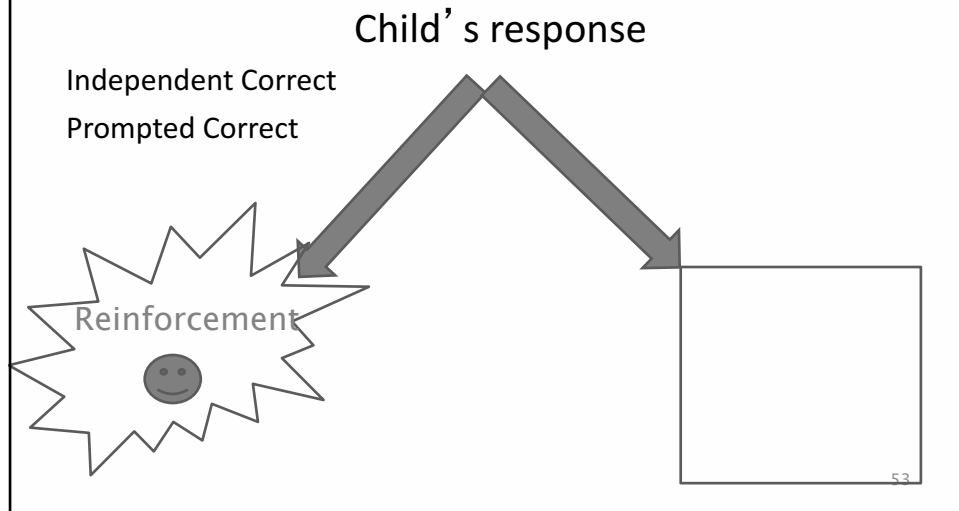
## Case Study

<b>Instruction</b>	<b>"Do this" and perform the gross motor action</b>
<b>Prompt (if needed)</b>	Physical prompt
<b>Behavior (Response)</b>	Correct – imitates the movement Incorrect – waits longer than 5 seconds; performs incorrect movement
<b>Consequence</b>	
<b>Inter-trial interval</b>	

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## Discrete Trial Teaching

### The Consequence



## Reinforcement

- Process of giving something to the child that will increase the likelihood of the child



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## What is reinforcement?

- “**Reinforcement** describes a relationship between learner behavior and a consequence that follows the behavior. This relationship is only considered reinforcement if the consequence increases the probability that a given behavior will occur in the future, or at least be maintained.”

(Neitzel, 2010)

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## Difference between reinforcement and bribery???

Reinforcement – We present child with something for doing something appropriate to increase or maintain that behavior in the future.

Bribery – We present child with something to stop doing something (typically something inappropriate).

Ex: Toddler in the grocery store

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## How do I thin reinforcement?

- Incorporate visuals
- Provide stronger reinforcement but provide it less often.
- Pair tangible with social.
- If performance goes down, you may have thinned too quickly and may need to re-introduce a denser schedule of reinforcement.

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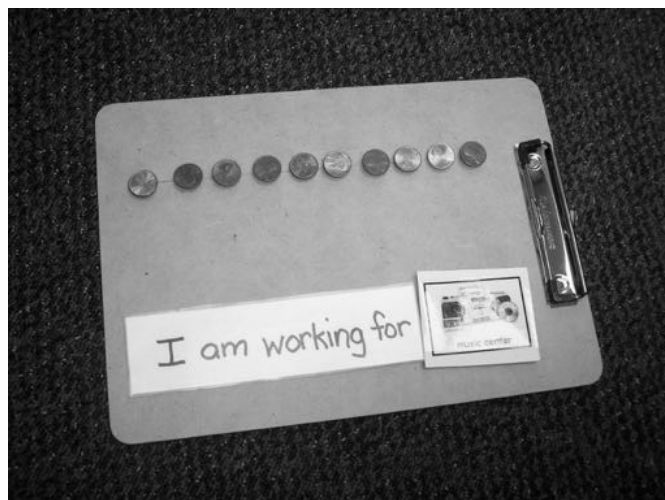
## Reinforcer board

- ▶ Visual to show child when gains access to reward
- ▶ Helps transitions away from reward
- ▶ Helps teach delayed gratification

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# Reinforcer Assessment

Reinforcer assessment is a formal or informal way to “assess” what the child’s highly-motivating activities, highly-preferred objects, and/or foods may be.

Do this before you begin teaching!

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## Reinforcer Assessment

Student: \_\_\_\_\_ Date: \_\_\_\_\_ Assessor: \_\_\_\_\_

### Circle the Preferred Item

Item Assessed	Total	Item Assessed	Total
1.		7.	
2.		8.	
3.		9.	
4.		10.	
5.		11.	
6.		12.	

1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12
	2-3	2-4	2-5	2-6	2-7	2-8	2-9	2-10	2-11	2-12
		3-4	3-5	3-6	3-7	3-8	3-9	3-10	3-11	3-12
			4-5	4-6	4-7	4-8	4-9	4-10	4-11	4-12
				5-6	5-7	5-8	5-9	5-10	5-11	5-12
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						7-8	7-9	7-10	7-11	7-12
							8-9	8-10	8-11	8-12
								9-10	9-11	9-12
									10-11	10-12
										11-12

NYC Department of Education  
District 75, Office of Autism-2004

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## How do I make an error correction effective?

- ▶ There are three parts to an error correction:
  - The Corrective Statement
  - Model/Prompt the correct response
  - Inter-trial interval withholding reinforcement
  
- ▶ Then you repeat the trial with prompting to ensure they get it right.

(PEAK, 2013)

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## The Corrective Statement

- When a child responds incorrectly or fails to respond..... begin the error correction procedure.
- Corrective Statement: “No, you didn’ t get it.” or “oops, you weren’ t paying attention and got it wrong.”
- Flat affect
- Not punitive, but not socially reinforcing either

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## The model/prompt of correct response

- After the corrective statement:
  - Immediately prompt them, and say AT THE SAME TIME.... “This is doing.....” .
  - You are combining the prompt to show them how to do it right with the statement to tell them it is right.
  - Again, remain flat in your affect.

– (PEAK, 2013)

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## Repeat trial

- After a child gets a trial incorrect, and you perform an error correction.... You must now repeat the exact trial.
- Immediately after the cue, prompt him/her so that they get it right!
- Immediately reinforce them for getting it right, but NOT WITH THEIR FAVORITE TOY if they got it wrong due to inattention.

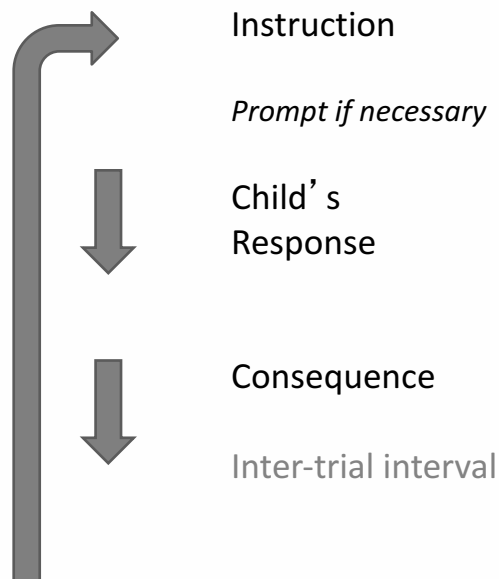
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## Case Study

Instruction	"Do this" and perform the gross motor action
Prompt (if needed)	Physical prompt
Behavior	Correct - imitates the movement Incorrect - waits longer than 5 seconds; performs incorrect movement
Consequence	Correct - reinforcement - tangible reinforcer
Inter-trial interval	Incorrect - error correction

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## Discrete Trial Components



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## Inter-trial interval

- Inter-trial interval is the interval of time in between the presentation of the consequence and the onset of the next trial (presentation of the next instructional cue).
- This interval of time should be brief (approximately 30 seconds or less).
- An interval of time that is brief keeps the student's attention.
- (PEAK, 2013)

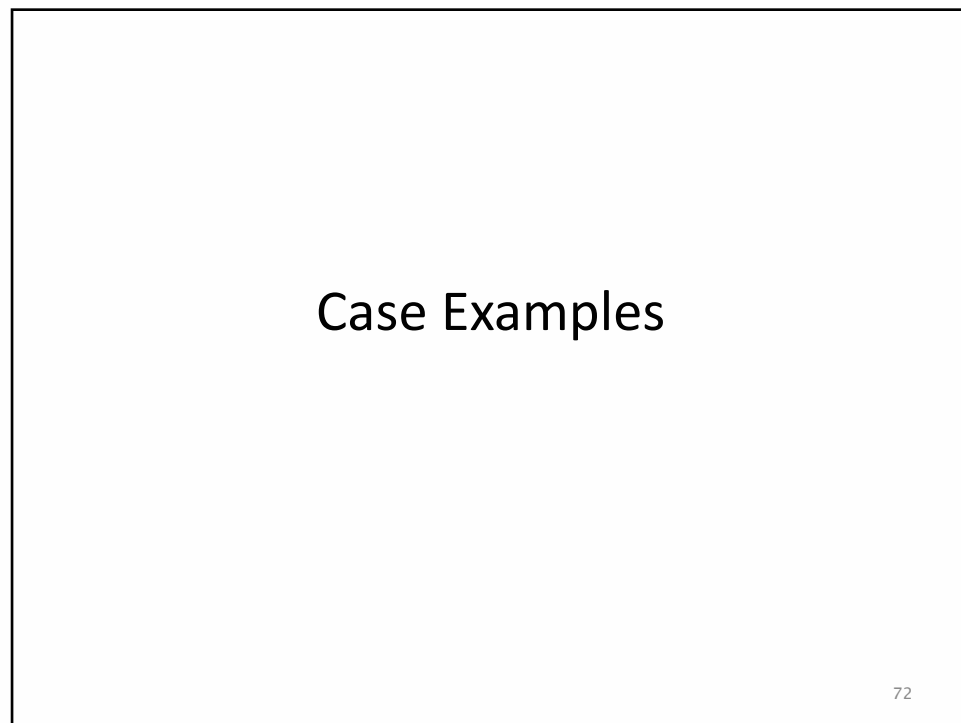
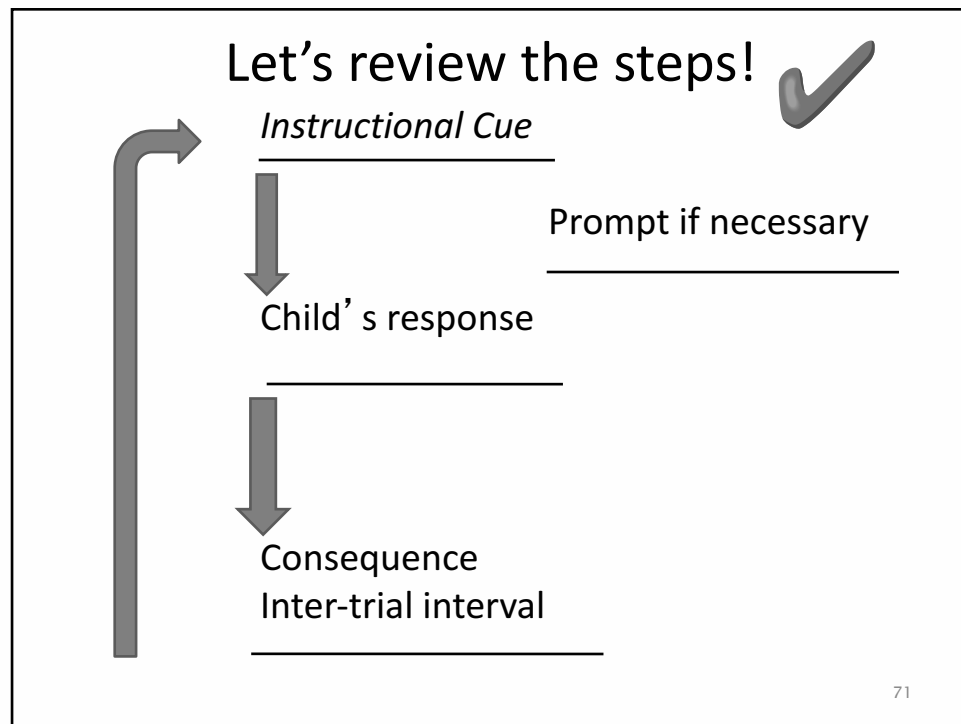
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## Inter-trial interval after error correction

- ▶ After prompting them and show/teaching them the correct response, the inter-trial interval begins.
- ▶ This is when learning occurs!!!!
- ▶ Remove any materials or remove any physical contact.
- ▶ Remain silent and wait approximately 5-8 seconds.
- ▶ NO REINFORCEMENT GIVEN (EITHER SOCIAL, TANGIBLE, OR EDIBLE).
- ▶ Begin repeat trial.

▶ (PEAK, 2013)

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## Teaching body parts

- Goal: Identify five body parts
- 1. Instruction, “Touch nose”
  - (Prompt = physical prompt)
- 2. Behavior = child touches nose
- 3. Consequence
  - Gets correct = reinforcement
  - Incorrect = error correction procedure
- 4. Inter trial interval

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## Tips

- Will do the same five body parts until 90% accuracy, but vary the order of the five
- Only physical prompts
- Will do four trials, fifth trial will be the test trial

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## Teaching writing name

- Goal: Write name
- 1. Instruction, “Write name”
  - Prompt the child with a physical prompt to write all letters.
  - Fade prompt by decreasing assistance on the last letter of name
  - Visual prompt with highlighter
- 2. Behavior = child writes name
- 3. Consequence
  - Gets correct = reinforcement
  - Incorrect = error correction procedure
- 4. Inter trial interval

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## Tips

- Pick a time to practice it versus every single time expected to write name
- For children who get prompt dependent, change the placement of your physical prompt
- If child can write name with only visual prompt, do not use the physical prompt

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## Teaching play skills

- Goal: Child will play with legos
- 1. Instruction, “Do this”
  - (Model for the child how to put together two legos – he has two and you have the same two across from him)
  - Physically prompt to put together the legos
- 2. Behavior = child puts together the legos
- 3. Consequence
  - Gets correct = reinforcement
  - Incorrect = error correction procedure
- 4. Inter trial interval

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## Tips

- Decide if you are focusing on imitation or teaching a toy.
- If imitation, vary the imitation versus doing the same activity over and over again
- If toy, practice with that toy and quickly add other toys as well.

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## Questions?

- Thank you!

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