Differential Reinforcement
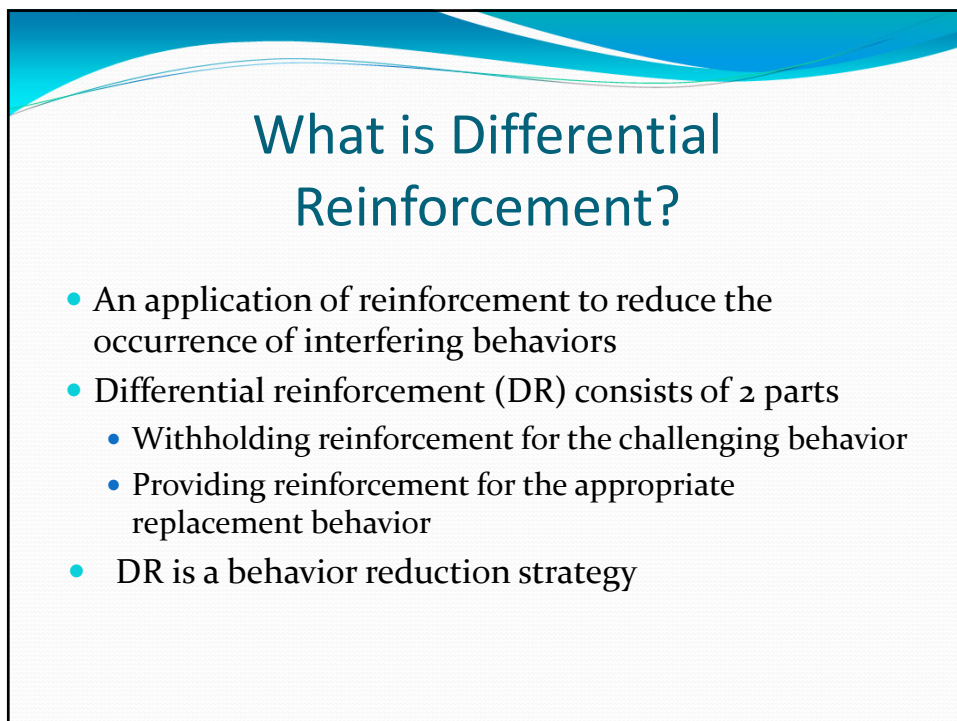
Applied Behavior Analysis Part V

WEST ORANGE COUNTY CONSORTIUM FOR SPECIAL EDUCATION
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What is Differential Reinforcement?

- An application of reinforcement to reduce the occurrence of interfering behaviors
- Differential reinforcement (DR) consists of 2 parts
  - Withholding reinforcement for the challenging behavior
  - Providing reinforcement for the appropriate replacement behavior
- DR is a behavior reduction strategy

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Four Differential Reinforcement Procedures

- Differential Reinforcement of Other Behaviors (DRO)
  - Reinforcement is provided when the student is not engaging in the interfering behavior
  - The goal is to reduce interfering behavior to zero occurrences by increasing the amount of time between occurrences
  - One pitfall of DRO is that it does not systematically teach a replacement behavior
  - Example: Student receives reinforcement when he refrains from using vulgar language for 15 minutes

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- Differential Reinforcement of Low Rates of Behavior (DRL)
  - Reinforcement is provided if the student engages in the interfering behavior at or below a predetermined criterion
  - The goal is to reduce the number of interfering behavior occurrences to an acceptable level
  - Example: Student receives a reinforcer when he uses his 'Question' card 3 or fewer times per hour

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- Differential Reinforcement of Alternative Behavior (DRA)
  - Student is provided with reinforcement when using a replacement behavior and reinforcement is withheld when student is engaging in interfering behavior
  - The goal is to reduce the interfering behavior by reinforcing the use of a more appropriate alternative/replacement behavior
  - Example: Teacher reinforces student when he raises his hand by calling on him, but does not call on him if he shouts out

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- Differential Reinforcement of Incompatible Behavior (DRI)
  - Reinforcement is provided to student when the student is using a replacement behavior that is incompatible with the interfering behavior-it cannot occur at the same time as the interfering behavior
  - The goal is to reduce the interfering behavior by reinforcing a functional replacement behavior which is incompatible
  - Example: Student receives reinforcement for walking in line and not when she runs in line

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- When reinforcing students for not engaging in an interfering behavior DRO or DRL are the procedures used
- When reinforcing a student for engaging in more appropriate behaviors DRA or DRI are the procedures used

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How is DR Being Used?

- Example 1:
  - When John is asked to clean up in preparation for transitioning to circle time he screams, lays on the floor, and refuses to put toys away. A DR system using DRA is introduced. A break card was introduced. Each time it was time to clean up John was prompted to use his break card when he first started to scream. He was verbally reinforced for using his break card, was allowed a 1 minute break from clean up time, then went back to cleaning up. If he screamed again he was prompted to use his break card. Over time John was putting most toys away before using his break card.

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- Example 2: When lining up after lunch Lilly would hit and push the peers who were next to her in line. After collecting data it was determined that Lilly was hitting or pushing peers as soon as she got in line and every 20 seconds while in line. Using a DRO procedure every time Lilly got in line and immediately refrained from hitting or pushing she was immediately reinforced with a gold fish and then again reinforced every 15 seconds if she refrained from hitting or pushing. Over time the time between goldfish was increased. Now Lilly can line up and get to the location without hitting and pushing.

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- Example 3: During independent seat work time, Carlos spent most of his time wandering around the room instead of in his seat. The function was determined to be attention seeking. A DRI procedure was introduced. When Carlos was sitting in his seat during independent work he was reinforced by his teacher giving him verbal praise and attention. When Carlos would wander no attention was given to him until he returned to his seat. After some time Carlos was spending more time in his seat and less time wandering.

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Selecting a DR Procedure

- Goal is to eliminate interfering behavior that is unacceptable/violent and student has other appropriate behaviors – DRO (hitting)
- Goal is to reduce the interfering behavior, the behavior is non-violent, irritating, disruptive – DRL (cursing)
- Goal is to substitute the interfering behavior with a more appropriate behavior that is incompatible – DRI (out of seat)
- Goal is to substitute the interfering behavior with a more appropriate replacement behavior that could co-exist with interfering behavior - DRA (calling out)

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DRI and DRA

- Select an incompatible or a alternative/replacement behavior
- Incompatible examples: out of seat/in seat; running/walking
- Alternative/replacement examples: yelling out/raising hand; screaming/use break card; hitting/learn to give high 5
  - ** Note: remember replacement behaviors must serve same function as interfering behavior and be just as easy to use

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Types of Reinforcement Schedules

- <u>Continuous:</u> reinforcement is provided after each correct response
  - Advantage: learning occurs quickly
  - Disadvantage: satiation may occur and it is time consuming

- <u>Intermittent:</u> reinforcement is provided for some but not all correct responses
  - Advantage: maintains behavior over time
  - Disadvantage: not as effective for teaching new skill

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- <u>Ratio Reinforcement Schedule</u>: reinforcement is provided after a specific number of correct responses; there are two types:

  - <u>Fixed Ratio</u>: reinforcement is delivered after a specified number of correct responses
    - Advantage: builds a high response rate
    - Disadvantage: irregular responding may occur if reinforcement is stopped

  - <u>Variable Ratio</u>: reinforcement is based on an average number of correct responses
    - Advantage: student's rate of responding remains constant
    - Disadvantage: not effective for teaching new skill

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- Interval Reinforcement Schedule: student is reinforced after a period of time; there are two types
  - Fixed Interval: reinforcement follows a specified amount of time
    - Advantage: easy to implement
    - Disadvantage: student stops using target skill following reinforcement and begins to work again just before the next reinforcement period
  - Variable Interval: reinforcement is provided after an average amount of time
    - Advantage: easy to implement
    - Disadvantage: not effective for teaching new skill

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- DRO
  - Most use fixed interval (i.e., R+ occurs every 1 minute contingent upon the absence of the interfering behavior during that time)
  - A variable interval may be used (i.e., reinforcement occurs every 30, 60, or 90 seconds in random order, with an average time of 1 minute)
  - When determining the interval (the time between R+), get a baseline (i.e., Jim hits on average 12 times per hour, so about every 5 minutes, then set your interval at 4 minutes and provide R+ every 4 minutes and work up)

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- DRL: during DRL the schedule for R+ is set based on baseline data; the R+ will continue while decreasing the number of times the interfering behavior is tolerated

- Example: Shi get up to get a drink of water 4 times during a 20 minute small group session. Initially she will receive R+ for only getting up 4 or fewer times per session. As she understands, the criterion is decreased. So over time slowly deliver R+ if she gets up 3 or fewer times, then 2 or fewer times, then for only 1 time.

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- DRI or DRA

  - In beginning use continuous R+
  - This helps student associate the replacement behavior with R+
  - When delivering the R+ describe the replacement behavior ("You were really looking at the material")
  - Once the student is successfully using the replacement behavior move to an intermittent schedule of R+

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Implementation

- Steps for DRL
  - Define interfering behavior, discuss this with student, what does it look like?, may use visuals, video models, etc. to show student what it looks like
  - Show student how he can earn a R+, let him know how many instances are allowed
  - **Example**: Student gets up 5 times during 20 minute independent work time, put 5 cards on student's desk, each time he gets up during the 20 minutes a card is removed, if he has at least 1 card at the end of the 20 minutes he earns his R+. Over time start to decrease the number of cards available.

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Day 1

Day 7

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- Steps for DRO
  - Define interfering behavior, discuss this with student, what does it look like?, may use visuals, video models, etc. to show student what it looks like
  - If you are using other procedures with DRO, such as fixed interval of time where you will set a timer, explain this to student
  - Set your time based on data, and decide how to respond if student engages in the behavior before time is up: Will the teacher reset the timer and start over? Will the teacher let the timer run out, explain to student that he engaged in the behavior during the interval so he is missing out on R+ and wait for the next scheduled interval to deliver R+ if interfering behavior is absent

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- **Example**: Josh rubs his head an average of every 20 seconds, using visuals, a timer set for 20 seconds and a reinforcement menu a DRO procedure is put in place

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- Steps for DRI or DRA
  - Define interfering behavior, discuss this with student, what does it look like?, may use visuals, video models, etc. to show student what it looks like
  - Define and show what the replacement/incompatible behavior looks like
  - Explain to student how earn R+
  - If the interfering behavior occurs: put it on extinction or interrupt and redirect the student to use the replacement behavior
  - Deliver reinforcement based on reinforcement schedule determined appropriate

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- **Example**: Missy screams when given math tasks, staff remove Missy from the classroom, staff are positively reinforcing the screaming if the function is to get out of math tasks. Staff can put it on extinction, meaning Missy will not be removed from class during math tasks when she screams. Or staff can interrupt and redirect Missy to use a replacement behavior. When Missy screams given math tasks, staff will prompt her to point to a break card they show her and Missy is reinforced by receiving positive praise for using a break card followed by being allowed to take a break from the activity.

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Things to Remember

- Select a schedule of reinforcement that will be used with ease among staff members and will be most likely to result in decrease of interfering behaviors
- Select an appropriate replacement behavior, if applicable
- Select powerful reinforcers
- Thin out the reinforcement as student is showing success
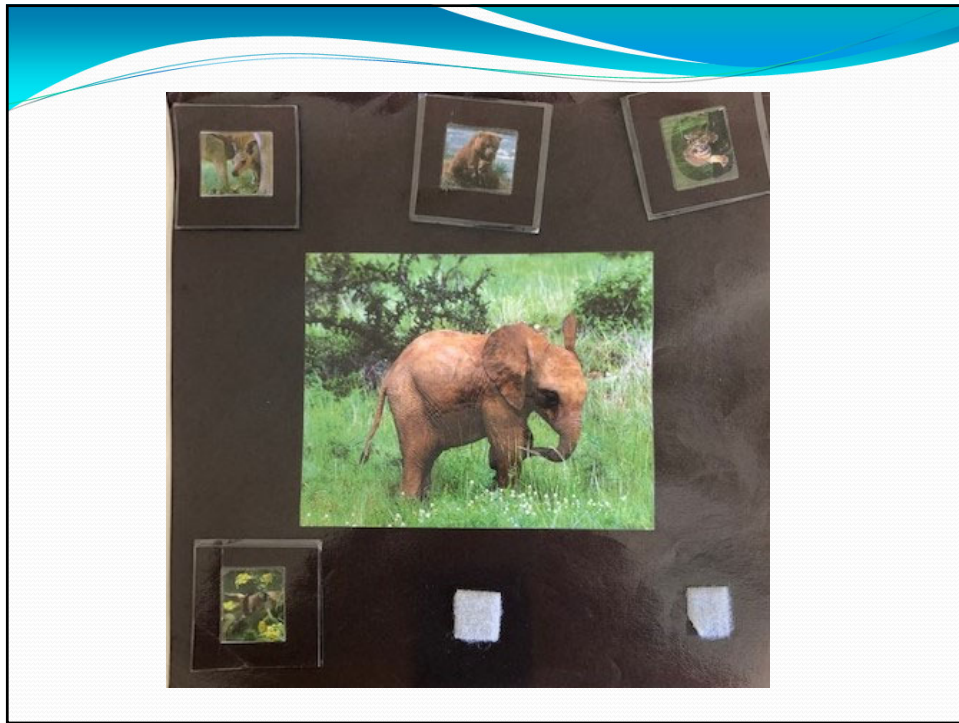- Combine DR with the systematic teaching of new skills
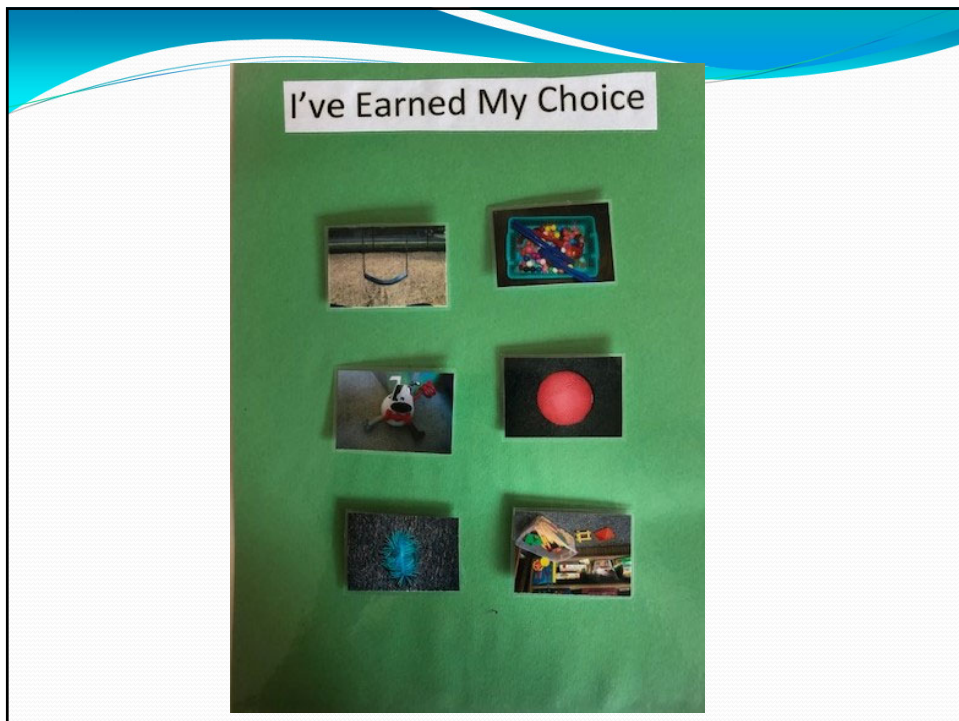
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Differentiating Reinforcement

- Categorizing Reinforcers
  - Conduct a reinforcer assessment to categorize reinforcers
  - Put them into 3 categories: A level(reinforcers that are of highest value to student) B level (reinforcers that are of value, but definitely not as desired as A level) and C level (these are somewhat reinforcing, better than nothing)
  - The concept is simple
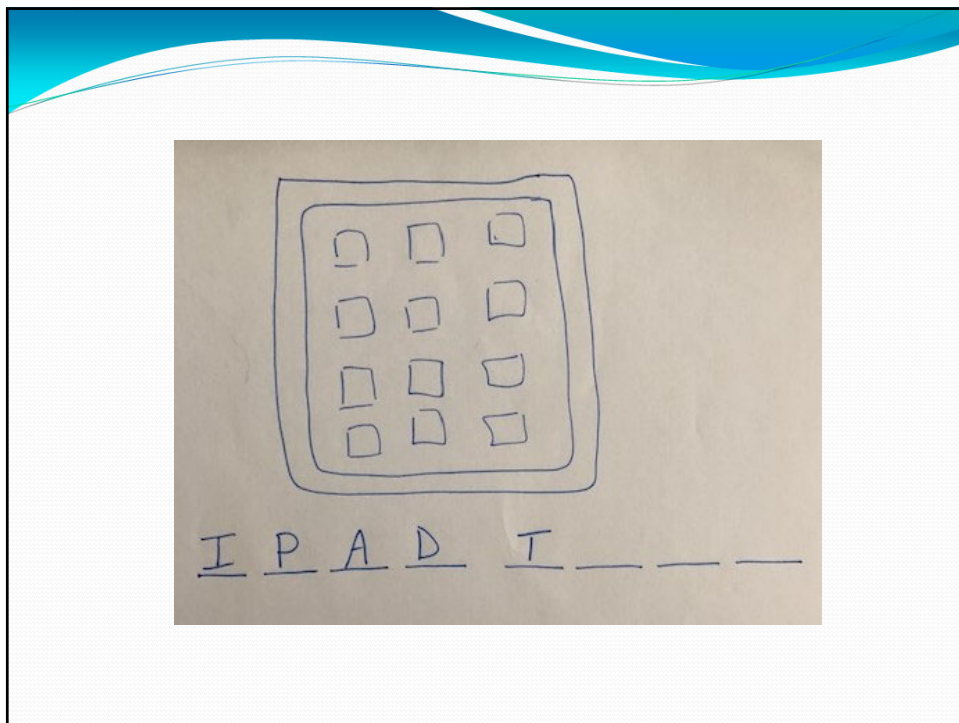   PROVIDE THE STRONGEST, MOST DESIRED, REINFORCERS FOR THE BEST PERFORMANCE

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I've Earned My Choice

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Thank You

See you soon for Part VI

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