Reinforcement and Token Economy Systems

Applied Behavior Analysis Part IV

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What is Reinforcement?

- Reinforcement is any stimuli which will increase, or maintain at the same level/rate, the likelihood that the target behavior will re-occur
- It describes the relationship between learner behavior and the consequence that follows the behavior
- Only if the consequence increases the probability that the target behavior will occur again, is it considered to be reinforcing

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Reinforcement Cont.

- It is based upon the principles of ABA
- B.F. Skinner argued that reinforcement must be individualized and based upon learner preference.
- Reinforcement must occur immediately
- Research has demonstrated that using reinforcement is an effective practice that can be used to strengthen behaviors and skills

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Reinforcement is Used to..

- Increase on task behavior
- Increase use of appropriate behaviors
- Teach a replacement behavior for an interfering behavior
- Teach new skills

*** Use reinforcement to increase target skills/behaviors

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Three Reinforcement Procedures

- Positive Reinforcement: this is presenting a stimulus to increase a response
  - This is generally the strategy teachers use when first trying to teach a new skill or when trying to increase appropriate behaviors
  - Example 1: The teacher wants the student to greet peers when he arrives at school in the morning. To assist with this, every time student greets a peer he is given a high five and a yo-yo to play with for 30 seconds
  - Example 2: The teacher wants a student to raise his hand when he wants to share information with the class. Every time the student raises his hand rather than yell out the teacher gives a thumbs up and a check mark on an index card which will later be "cashed in" for something tangible the student likes

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Procedures Cont.

- Negative reinforcement: this is the removal of an aversive/unwanted stimulus after the student uses a skill or target behavior
  - The learner gets rid of something that is unpleasant to them
  - When used effectively, this increases the student's use of a target behavior
  - Negative R+ is often confused with punishment- IT IS NOT PUNISHMENT
  - Example: The teacher is trying to teach the student to remain calm when working independently on math, a non-preferred subject. When the student remains calm the teacher removes the work after the student has completed 10 problems rather than the 15 on the worksheet.

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Procedures Cont.

- Token Economy Systems
  - This is a type of reinforcement strategy which can be very effective
  - Token economy systems are referred as such because they are based upon a monetary system in which tokens are used to acquire desired reinforcers, also known as back up reinforcers
  - These systems can be used in a variety of settings
  - Teachers like these because they can be administered immediately following the desired behavior, they do not interrupt the activity, they can maintain a student's behavior over a longer period of time, and they can be used with several students at the same time

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Implementing a Token Economy

- Be sure student understands the system- teach it to him
- Identify tokens which are: attractive to student, easy to carry, easy to dispense
- Remember age and developmentally appropriateness
- Teacher should set up a system for the exchanging of tokens and make sure student understands this
- Be sure student knows the rules/ expectancies for earning the tokens- how much of this behavior is required to earn a token?
- What are the rewards for earning tokens and how many tokens are required to 'cash in'- is a choice board being used? Tiered token system?
- When will 'cash in' occur? Time specified (i.e., after 10 minutes bell rings and child 'cashes in' and reward level depends on number of tokens earned during that specific time period OR is it token based meaning when you earn all your tokens you are given the reward)

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Implementation Cont.

- What will the system look like? How many tokens?
- Focus needs to be on the behavior we are reinforcing not getting through the task for completion
- Token economy systems can develop into self-monitoring systems
- Token economy systems allow student to earn R+ which take more time (i.e., trip to playground)
- If possible student can place token on the board after being given it
- It is important for teachers to understand the token economy system does NOT change the behavior! It is what the tokens represent- the R+- as well as the timing of the delivery which changes the behavior

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Implementation Cont.

- Response Cost System
  - In this system the student receives tokens for refraining from engaging in inappropriate behaviors
  - If student does engage in an inappropriate behavior (remember to only choose 1-2 you are targeting at once) one of the tokens is removed
  - The loss of a token provides a student with visual feedback that is linked to a distinct behavioral moment
  - A response cost system should ONLY be implemented when student clearly understand why he/she is losing a token and has been earning under a positive reinforcement token system AND ONLY UNDER THE SUPERVISION OF THE TEACHER !!!!!!!
    - Positive reinforcement increases the likelihood replacement behaviors will occur in future... long term learning, punishment does not
    - Punishment must be delivered in a non-emotional manner

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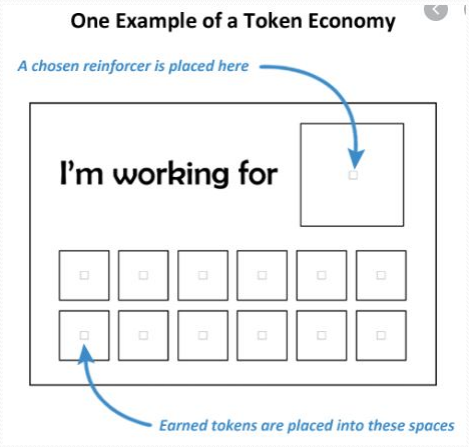
Examples of Token Economy Systems



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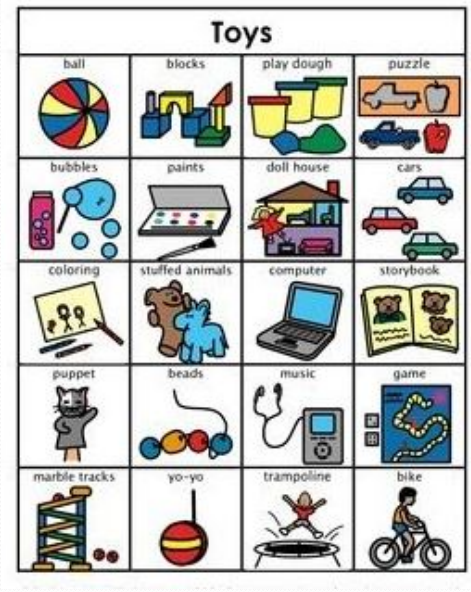

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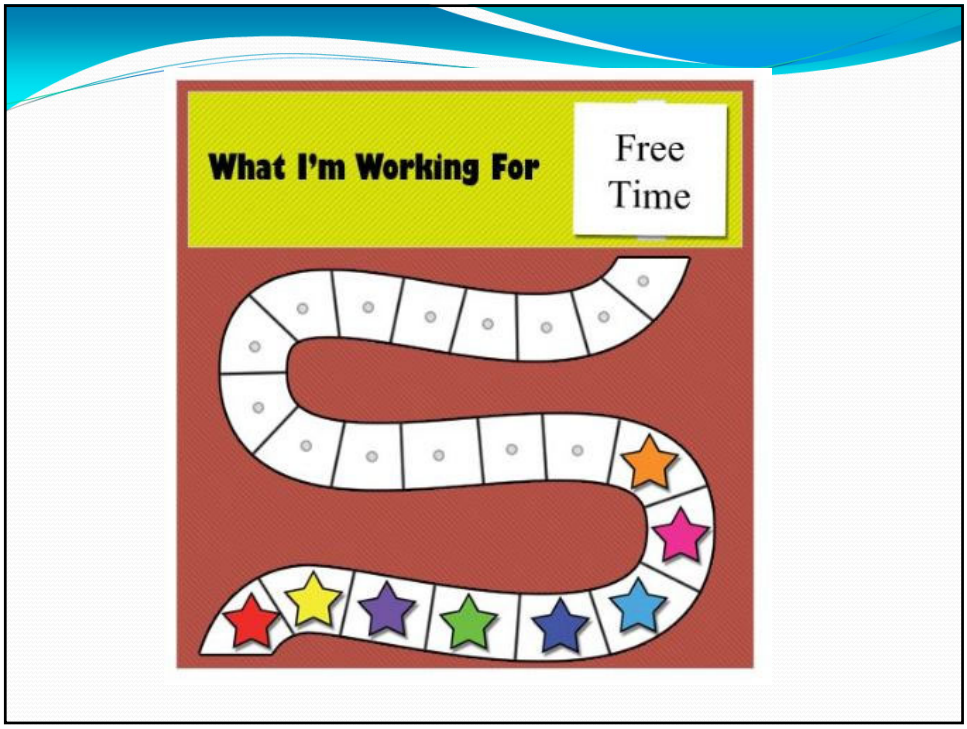

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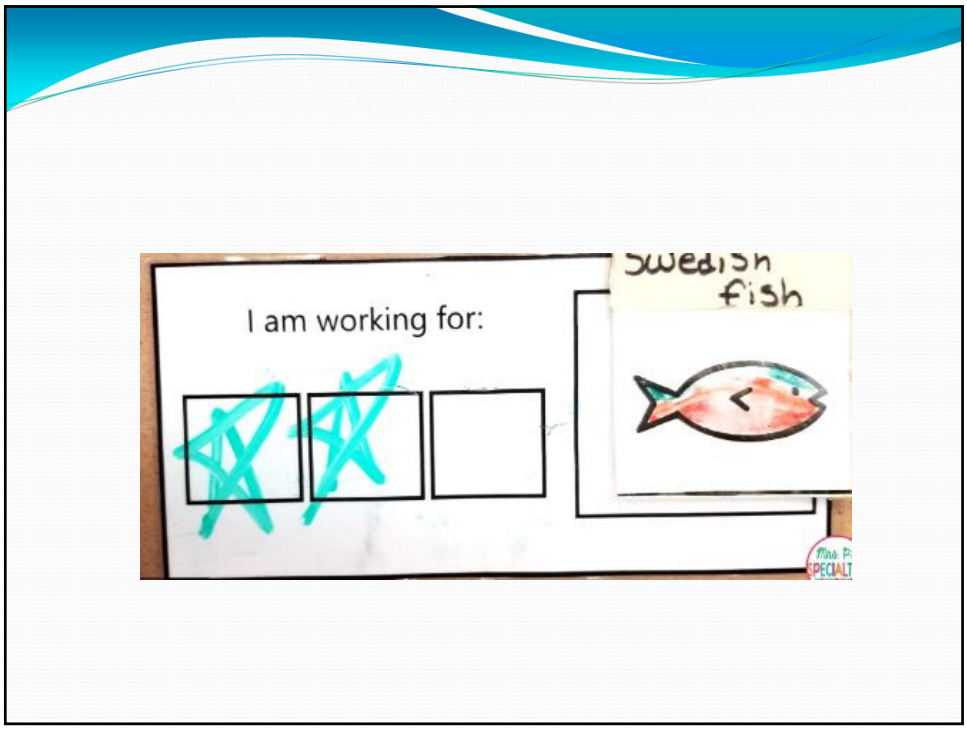

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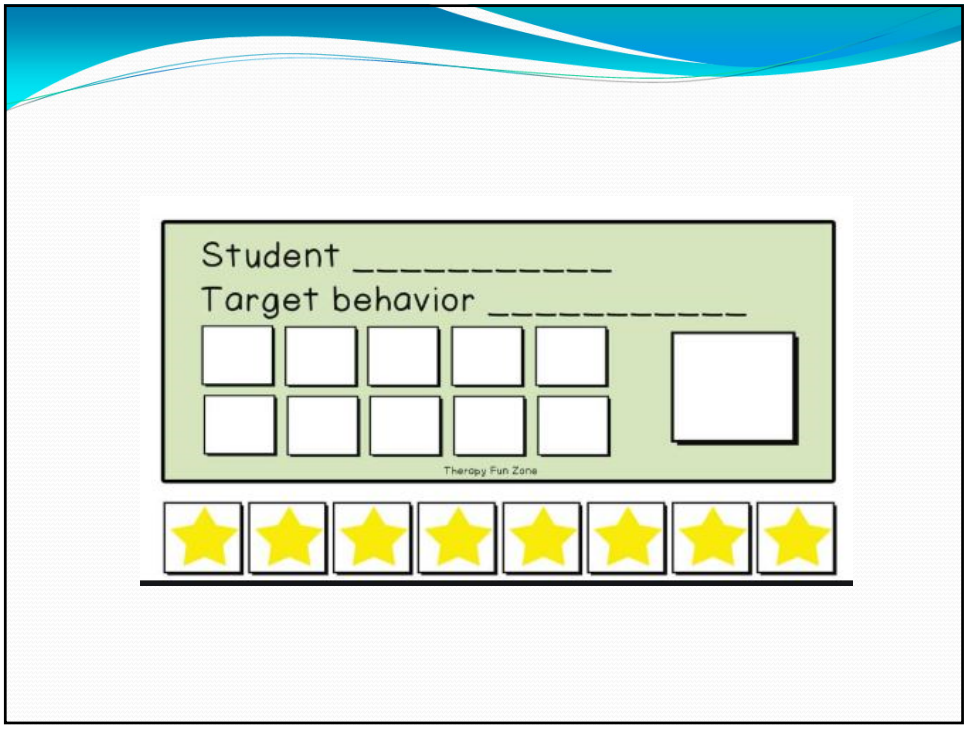
Student _____
Target behavior _____
Therapy Fun Zone

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THOMAS' TOKEN BOARD
HAVE SAFE HANDS
KEEP FEET ON FLOOR
HAVE QUIET VOICE
OR
HAVE SAFE MOUTH
I WILL EARN...

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Seven Elements of a Token Economy (Miltenberger, 2008)

1	Target Behaviours	Select the desirable target behaviours to be strengthened
2	Type of Tokens	The tokens to be used as conditioned reinforcers (e.g. poker chips, star stickers etc.).
3	Backup Reinforcers	The backup reinforcers to be exchanged for tokens (e.g. sweets, free-time etc.).
4	Reinforcement Schedule	A reinforcement schedule for token delivery (e.g. reinforcement for every correct response).
5	Exchange Criterion	How many tokens are needed to be exchanged for the backup reinforcers.
6	Time/Place for Exchange	A time and place for exchanging tokens for backup reinforcers.
7	Response Cost*	A penalty or fine where tokens are taken away for engaging in inappropriate behaviours.

*A response cost is not always used. See Cooper, Heron, and Heward (2007, p. 370)

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One-to-One Token Economy Example

Tarbox, Ghezzi and Wilson (2006) investigated the use of token economies in an effort to increase the eye contact of a 5 year old boy called Adam who was diagnosed with autism. We're going to go through one of the economies used in the Tarbox et al study and use Miltenberger's (2008) seven components to describe it.

- **Target Behaviour:** attending to his tutor before the delivery of an instruction; with "attending" defined as making eye contact with the tutor for at least 3 seconds.
- **Tokens to be used:** laminated "star stickers" placed on a "token board".
- **Backup Reinforcers:** a 90 second break from academic tasks where he could play with preferred toys of his choice.
- **Reinforcement Schedule:** Adam received 1 token every single time he engaged in the target behaviour (made eye contact for 3 seconds).
- **Rate of Token Exchange for Reinforcers:** a total of 10 tokens were required before Adam could earn a backup reinforcer.
- **Time and Place to Exchange Tokens for Backup Reinforcers:** this was done immediately after 10 tokens had been earned. It was completed at the classroom desk.
- **Response Cost:** they did not use a response cost.

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Primary vs. Secondary Reinforcers

- Primary Reinforcers: these are food, drinks, sleep
  - Unconditioned, do not require learning to work
- Secondary Reinforcers:
  - Conditioned reinforcement
  - Involves stimuli that becomes reinforcing after being paired with another stimuli that is reinforcing

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Types of Reinforcers

- Social
  - Smiles, high 5s, phrases such as "Great job"
- Tangibles
  - Toys, fidgets, books, stickers
- Activities
  - Computer time, play in sand, art
- Edibles
  - Food/drink
- Sensory
  - Rocking in chair, spinning on sit and spin, swinging
- Natural

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Reinforcement Assessment

- BEFORE implementing a R+ program a reinforcer sampling, or preference assessment, should be conducted
- A reinforcement program will not be successful unless the learner is highly motivated by the reinforcers
- Reinforcement is critical to the effectiveness of instruction

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Reinforcement Assessment Process

- List observable student preferences
  - What does student do during free time?
  - What things in the environment does he seem to gravitate towards?
  - What is it about the activity/item the student seems to be enjoying- the salient points of preference (i.e., turning of the wheels)
- Identify potential reinforcers based on observations

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R+ Assessment Cont.

- Appropriately making use of existing preferences. Preferences are transferred to more appropriate items, activities, and actions
  - Example: turning of lights on and off
- Using some variations of existing preferences.
  - Example: 'running or eloping'
- Incorporating aspects of self stimulatory behaviors
  - Example: student constantly rubs pencil on face

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R+ Assessment Cont.

- Develop and enhance reinforcement values
  - Present the reinforcers you have identified during 'Play' time and squeeze them in between stronger reinforcers
  - Give free access to those potential reinforcers at first
  - SELL your reinforcement with your own enthusiasm
  - Use pairing- this is associating the potential reinforcer with an established reinforcer
  - When trying to establish new reinforcers limit access to known reinforcers

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R+ Assessment Cont.....

- Develop a reinforcer hierarchy
  - Establish A, B, and C level reinforcers
  - These will be used to shape desired/ target behaviors
  - Match the quality of the reinforcer with the quality of the response
  - Match your body language/tone with quality of response

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Factors to Consider When Selecting Reinforcers

- Age Appropriateness
  - Example: student likes to watch objects fall
- Practicality: how practical is it to use this at this time?
- Level of interference
- Immediacy
- Group effect
- Time of Day/ Activity
- Power of R+

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Implementing Reinforcement

- Timing and Contingency
  - Must be immediate
  - Must be contingent upon the response
- Schedules
  - Continuous: this is used when students are reinforced each time they use the target behavior; this type of R+ schedule is most often used when learning a new skill/ behavior
  - Intermittent: as the student becomes more proficient at using the new skill continuous R+ is faded
    - Ratio: teacher delivers the R+ after student uses the skill a certain number of times
    - Interval: R+ provided after a certain amount of time

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Implementation Cont.

- Labeling the behavior
- Use of differential reinforcement-A,B,C hierarchy
- Availability and scheduling of R+- should be considered beforehand not after
- Variety
- Engagement!!! Social reinforcement!!!

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Fading of Reinforcement

- Thinning of R+ schedules from continuous to intermittent
- Transfer of R+: moving towards more natural and practical R+
- Delaying R+ - token economy

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Principles of Reinforcement

- Individualized and reinforcing
- Contingent
- A variety of R+ should be used
- Delivered according to the R+ schedule
- Delivered frequently
- Social R+ should be paired
- Reduce satiation- rotate
- Continuously developed and identify new R+
- Deliver R+ with enthusiasm
- Establish eye contact when delivering
- Consider age appropriateness
- Unpredictability and novelty enhance R+
- Teacher should describe the target skill when the student uses it
- Provided consistently
- Faded as quickly as possible
- Utilize differential R+
- REINFORCEMENT IS NOT BRIBERY!!!!!!!!!!!!!!!!!!!!!!!

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