




Behavior Interventions: Differential Reinforcement


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Behavior Intervention

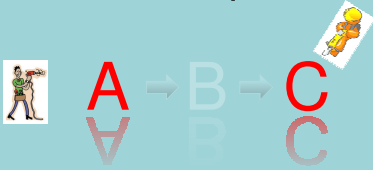

It is important to consider that for many individuals with ASD, problem behavior is a result of a lack of knowledge of “**what to do**” to most effectively access reinforcement.

What types of things do we attempt to access in our daily lives?



Getting Started: Review


Behavior change involves the manipulation of **antecedents, consequences, or both.**

Consequent Interventions

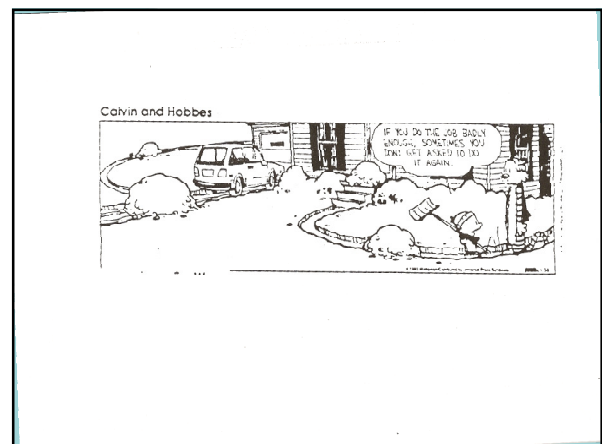
Reinforcement


- Types
- Limited Access
- Amount
- Behavioral Criterion



ABA Principle- Reinforcement

- **Positive Reinforcement:** a “gain” function (social attention, preferred activities, tangible items, and/or sensory stimuli)
- **Negative Reinforcement:** an “escape” function (undesired activities, requests, social attention, and/or sensory stimuli)






Preference-assessment

Any effective behavior change program starts with the identification of possible reinforcers.


Sometimes interventionists may take the view that a student did not respond to the delivered reinforcer, it might be more beneficial to take the alternative view that the interventionist may have failed to identify an effective reinforcer.



Consequent Interventions

Seven Considerations in Using Reinforcement


- Immediacy
- Schedule
- Amount
- Pairing
- Proximity
- Labeling
- Expressiveness



Consequent Interventions

Schedules of Reinforcement


- How often person gets SR+ for a correct response.
 - Continuous – Every correct response gets reinforced.
 - Intermittent – Person's correct responses are reinforced periodically.
- When is continuous schedule best?
 - When teaching a new skill.
- When is an intermittent schedule best?
 - When person has reached criterion and teacher wants to reduce reinforce for maintaining response only.
- Example of continuous Reinforcement:
 - Each correct response is reinforced by teacher when the response is made.



Consequent Interventions

Schedules of Reinforcement


- **Ratio**- Schedule reinforcement according to the number of behaviors
 - Fixed
 - Variable (average)
- **Interval** – The first behavior occurring after the passage of a certain amount of time
 - Fixed
 - Variable (average)



Consequent Interventions

Schedules of Reinforcement Examples

- FR-5
5-5-5-5-5-5-5-5-5 = 45 Math Problems
- VR-5
4-5-5-6-4-6-5-6-4 = 45 Math Problems
- FI – 10 Minutes
10-10-10-10-10-10 = 60 minutes
- VI – 10 minutes
9-11-10-9-11-10-10 = 60 minutes




Differential Reinforcement

Reinforcement is delivered contingent on the occurrence of a behavior other than the problem behavior or the behavior occurring at a reduced rate

&


Withholding reinforcement as much as possible for the problem behavior.

(Cooper, Heron, & Heward, 2007)




Video Example

Big Bang Theory: Chocolate




Differential Reinforcement Strategies

1. Differential Reinforcement of Alternate Behaviors (DRA)
2. Differential Reinforcement of Incompatible Behaviors (DRI)
3. Differential Reinforcement of Lower Rates of Behaviors/Responding (DRL)
4. Differential Reinforcement of Other Behaviors (DRO)



Differential Reinforcement

Differential Reinforcement of Alternative Behavior (DRA)




Differential Reinforcement

Differential Reinforcement of Alternative Behavior (DRA)

A reinforcer is withheld following a target behavior and only delivered following a specified alternative behavior.

A teacher can use an alternative behavior to occupy the time in which the undesirable behavior occurs.

(Cooper, Heron, & Heward, 2007)




Differential Reinforcement

Differential Reinforcement of Alternative Behavior (DRA)

Reinforcing hitting a switch that elicits a recorded "I want a break" message to replace sliding out of a desk

Reinforcing correct responses to a task with attention instead of slapping for attention



Differential Reinforcement


Differential Reinforcement of Alternative Behavior (DRA)

Advantages

- Simultaneously weakens the problem behavior while strengthening acceptable behaviors

Disadvantage

- Problem behavior can still occur



Functional Communication Training

A special form of DRA

FCT is a systematic practice to replace inappropriate behavior or subtle communicative acts with more appropriate and effective communicative behaviors.


When using FCT, teachers/practitioners analyze the problem behavior to determine what the learner is trying to communicate.

Franzone, E. (2009). Overview of functional communication training (FCT). Madison, WI: National Professional Development Center on Autism Spectrum Disorders, Waisman Center, University of Wisconsin.




Expanded Communicative Functions

- Social convention
Greeting others, responding to one's name
- Attention to Self
Getting the attention of others, showing off
- Reject/ Protest
Rejecting non-preferred items, indicating *no*
- Request an object
Requesting access to preferred objects or activities
- Request an action
Requesting assistance with a task



Expanded Communicative Functions


- Request information
Requesting the name of an object, requesting clarification
- Comment
Alerting a communication partner to some relevant aspect of environment
- Choice making
Choosing between two or more alternatives
- Answer
Indicating yes or not to a question
- Imitation
Imitating a head nod for yes or no



Functional Communication Training


Reinforce the student saying help, instead of screaming when the computer freezes.

Reinforce handing a picture card to a peer requesting a toy instead of grabbing it.



Differential Reinforcement


Differential Reinforcement of Incompatible Behavior (DRI)



Differential Reinforcement

Differential Reinforcement of Incompatible Behavior (DRI)

Reinforcing a behavior that can **NOT** occur at the same time as the problem behavior




Differential Reinforcement

Differential Reinforcement of Incompatible Behavior (DRI)

Reinforce answering questions to reduce the number of swear words a learner may be using. The learner can't swear and answer questions the same time

Reinforce sitting instead of wandering.



Differential Reinforcement


Differential Reinforcement of Incompatible Behavior (DRI)

Advantages

- Student cannot engage in problem behavior and replacement behavior at the same time

Disadvantages

- May be difficult to identify incompatible behaviors




Differential Reinforcement

Using DRA/DRI effectively

Selecting Behaviors to be Reinforced that:

- Exist in the learner's repertoire
- Require equal or less effort than the problem behavior
- Occur at a rate that will provide sufficient opportunities for reinforcement
- Will be likely reinforced in the student's natural environments

(Cooper, Heron, & Heward, 2007)




Differential Reinforcement

Using DRA/DRI effectively


- Select reinforcers that are powerful and can be delivered consistently.
- Consider what is doable.
- Reinforce alternate response immediately and consistently!

(Cooper, Heron, & Heward, 2007)



Differential Reinforcement

Differential Reinforcement of Lower Rates of Behavior/Responding (DRL)




Differential Reinforcement

Differential Reinforcement of Lower Rates of Behavior/Responding (DRL)

A reinforcer is presented following the occurrence of a designated lower rate of behavior

Used to decrease responses that need not be eliminated entirely

(Cooper, Heron, & Heward, 2007)




Differential Reinforcement

Differential Reinforcement of Lower Rates of Behavior/Responding (DRL)

Reinforce talking out 10 times per hour instead of a previously established rate of 20 times per hour

Ask "What time is it?" 6 times per 30 min instead of a previously established rate of 8 times per 30 min

(Cooper, Heron, & Heward, 2007)



Differential Reinforcement

Differential Reinforcement of Lower Rates of Behavior/Responding (DRL)


Advantage

- Behavior change can be addressed incrementally

Disadvantages

- Attention given to problem behavior
- Not for use with SIB, and other potentially dangerous behaviors.
 - Time consuming

(Cooper, Heron, & Heward, 2007)




Differential Reinforcement

Using DRL effectively


- Use baseline data to select response limits
 - Gradually thin the DRL schedule
 - Provide feedback to the learners concerning their performance

(Cooper, Heron, & Heward, 2007)



Differential Reinforcement

Differential Reinforcement of Other Behavior (DRO)




Differential Reinforcement

Differential Reinforcement of Other Behaviors (DRO)

Reinforcement is delivered contingent on the absence of problem behavior during or at specific times

(Cooper, Heron, & Heward, 2007)



Differential Reinforcement


Differential Reinforcement of Other Behaviors (DRO)

Reinforcement is delivered contingent on problem behavior not occurring throughout an interval of time (*Interval DRO*)

or

at specific moments in time (*Momentary DRO*)

(Cooper, Heron, & Heward, 2007)




Differential Reinforcement

Interval DRO

Reinforcement is delivered if NO occurrences of the behavior were observed during an entire time interval.

If the behavior occurs during an interval the interval is re-set and delays the delivery of reinforcement.




Differential Reinforcement

Example

A third grade teacher determines a student's response rate to be 6 times an hour; she sets her DRO interval at 5 min.

If the student exhibits the response during the interval, the timer was re-set for another 5 minutes.

If the student did not exhibit the response then the student earned 2 min of free play .



Differential Reinforcement

Differential Reinforcement of Other Behaviors (DRO)

Advantages


- Highly Effective
- Easy to understand

• Can be combined with other procedures

Disadvantages

- Other non-target behavior may occur and inadvertently be reinforced
- Must be implemented with high levels of fidelity


(Cooper, Heron, & Heward, 2007)



Differential Reinforcement


Using DRO effectively

- Set intervals to assure frequent reinforcement.
- Avoid delivering reinforcement at the same time as other problem behaviors are occurring.
- Gradually increase DRO intervals




Making decisions based upon data- Let's Practice!

- Determine current rate of behavior
- Decide on DR schedule to use
- Determine actual schedule based upon data on behavior




Better Ways to Measure Behavior

- **Frequency**— how often does the problem behavior occur
- **Rate** – number of responses during a timeframe
- **Duration** – how long does the problem behavior occur
- **Latency** –how long before the student begins the problem behavior



Goldilocks Rule of Reinforcement


- Reinforcement schedule needs to be “Just Right”.
- Opportunity to earn reinforcement needs to be available 2 times as often as challenging behavior.
- Does not mean will actually earn – reinforcement is contingent.



Kicks

Data: 6 hour day


Day	1	2	3	4	5
Data	10	0	5	4	6



Noncompliance- “No, I am not doing it.”

Data: one hour per day


Day	1	2	3	4	5
Data	5	8	7	9	11



Number of times shares in class

Data: one hour per day


Day	1	2	3	4	5
Data	3	1	3	1	2



Hits

Data: Four hours in evening at group home


Day	1	2	3	4	5
Data	24	16	12	32	46



Shirt Tearing

Data: 6 hour day at school

Day	1	2	3	4	5
Data	2	0	1	1	1





Inappropriate Acts

Data: two hours a day for 5 days (total)

Hits	Kicks	Steals
11	9	10






In Summary

A Review


Behavior change involves the manipulation of **antecedents, consequences, or both.**


A → B → C




Differential Reinforcement Strategies


1. Differential Reinforcement of Alternate Behaviors (DRA)
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4. Differential Reinforcement of Other Behaviors (DRO)



Parting shots

The success of any behavior change program is hinged on the accurate identification of reinforcers through FBA


And careful monitoring via continuous data collection and the graphing of that data.



Delivering Reinforcement

Implementing effectively

- Rule 1:** Cannot tell whether something is a reinforce until try it and observe effect on the behavior.
- Rule 2:** What is a reinforce for one person may not be for another. Individualized.
- Rule 3:** To be effective, a reinforce must occur during or immediately after the behavior.



Delivering Reinforcement


Implementing effectively

Rule 4: Limited Access

Rule 5: Reinforcement must be contingent if it is to be effective. RE: First this, then that.

Rule 6: When strengthening a new behavior, reinforce frequently.


Rule 7: Size of SR+ is big enough to keep student motivated, but not to big for satiation



Parting shots


How do I select a behavior intervention?

- Consider data from the FBA.
- Consider team and parent input.
- Consider interventions that teach new skills.
- Consider the least intrusive intervention for the student and teacher.
- Consider the difficulty in conducting the intervention.




Effective Interventions are...

- Multi-element approach
- Collaboratively designed
- Consistent
- Do-Able
- Based on setting the student up for success
- Clear & Concise: "If - then statements"
- Based upon a 3:1 ratio of positive to negative comments.



**"People don't shape the world,
the world shapes them"**
(BF Skinner)



Reference List & Suggested Readings

- Alberto, P.A. & Troutman, A.C. (1995). *Applied Behavior Analysis for Teachers* (Fourth Edition). Columbus, OH: Merrill Prentice Hall Publishers
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- Barbera, M.L. (2007). *The verbal behavior approach: How to teach children with autism and related disorders*. Philadelphia, PA: Jessica Kingsley Publishers.
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