

Differential Reinforcement of an Incompatible or Alternative Behavior

Function of Intervention:

This intervention was designed to increase rates of appropriate behavior and decrease rates of problem behavior by selectively providing reinforcement only to the desired behavior. There have been many empirical demonstrations of the effectiveness of differential reinforcement (DR) interventions (Cooper, Heron, & Heward, 2008).

Brief Description:

Children will continue to engage in problem behaviors that are reinforced. Therefore, it is important to minimize reinforcement for disruptive behavior to reduce disruptive behavior. Unfortunately, simply removing reinforcement often results in an “extinction burst”. Data tell us that about 40% of the time, when an adult makes adjustments to the environment to stop reinforcement for a problem behavior (e.g., ignoring disruptive behavior that the child has been exhibiting to obtain adult attention), the child will escalate disruptive behavior in an attempt to bring back the reinforcement. This escalated frequency, magnitude, and duration of the disruptive behavior is called an “extinction burst.” Extinction bursts are very problematic in classroom environments. As such, DR interventions have been developed to concurrently remove or reduce reinforcement for the problem behavior while reinforcing a functionally similar replacement behavior. Thus, the problem behavior diminishes while the child is provided with an alternative (more acceptable) means to access the desired reinforcement. To understand DR interventions, consider a child who calls out inappropriately in class for teacher attention. It is understood that the calling out behavior is maintained by the resulting teacher attention. Using DR procedures, the teacher would ignore the calling out behavior and only call on the child when she raises her hand (an alternative behavior). Over time the DR procedures will result in higher rates of hand raising and lower rates of calling out. In the end, the child is trained to exhibit the desired behavior when he or she wants teacher attention. This brief was designed to provide a simple guide to DR procedures focusing on DR of incompatible or alternative behaviors (DRI and DRA respectively). A DRA example involves providing reinforcement for an alternative behavior (hand raising in the above example). DRI is a version of DR that selects an incompatible behavior as the replacement behavior. For example, in-seat behavior is incompatible with out-of-seat behavior. Selecting an incompatible behavior as the replacement behavior minimizes the risk of inadvertently reinforcing the problematic behavior. For example, it is possible that the child may raise his or her hand while also calling out. Because hand raising is reinforced with teacher attention, the reinforcer is provided even though the problematic behavior also occurred and is similarly reinforced. If an incompatible behavior cannot be identified, then an alternative behavior will suffice (see 4a below).

Procedures:

1. Identify the consequence that is reinforcing the inappropriate behavior (e.g., verbal praise, escape).
2. Identify an incompatible or alternative behavior that can access the same consequence. Note, identification of an incompatible appropriate behavior is preferred.
3. Begin with a continuous fixed ratio (CFR) DR schedule. The goal of this step is to ensure the child is reinforced for the alternative behavior in the initial stages of the DR intervention.
4. Once the DR schedule has been initiated, the teacher is instructed not to respond to the target problem behavior if it is presented.
 - a. If using a DRA procedure and the child exhibits both the problem and alternative behaviors concurrently, the teacher is suggested to reinforce the child but note that the reinforcement it is due to the alternative behavior.
5. After a number of intervention days or sessions (for more severe cases) applying the DR (e.g. 5 days or 20-25 sessions) showing a marked reduction in the problem behavior, start to fade in reinforcement schedule. Note that after the intervention period is complete the desired behavior should continue to be reinforced at an appropriate level for the child and environment. If the desired behavior is not reinforced the child will return to the problem behavior (or some new behavior) to access the desired reinforcement.

Critical components that must be implemented for intervention to be successful:

- Successful identification of the reinforcer for the problematic behavior.
- Identification an appropriate incompatible/alternative behavior that the child is capable of doing.
- An initial schedule of DR that ensures that the child will be reinforced when they exhibit the desired behavior. A continuous fixed-ratio schedule is preferred whereby the student receives reinforcement each time the alternative behavior occurs.
- The problem behavior should be ignored once the DR schedule is initiated.
- A fading process of the DR schedule that is gradual enough to not result in the child reengaging in the problem behavior. One way to accomplish this is to make the reinforcement intermittent (so every so many occurrences of the desired behavior are reinforced) and unpredictable or variable such that the child knows that the alternative behavior will be reinforced periodically but is not sure exactly which instance of the desirable behavior will occasion reinforcement.

Critical considerations:

- DR interventions have a number of known limitations as outlined by Vollmer and colleagues (1993).
 - DR interventions are not considered the most effective approach for very severe behavior cases. Noncontingent reinforcement (NCR) procedure should be considered for such cases.
 - DR interventions can result in an extinction burst with associated issues.
 - DR interventions can be cumbersome for teachers. Care should be taken when designing the intervention to consider feasibility issues.

References

Cooper, J. O., Heron, T.E. & Heward, W.L. (2007). *Applied Behavior Analysis, Second Ed.* Prentice Hall: Columbus, OH.

Vollmer, T.R., Iwata, B.A., Zarcone, J.R., Smith, R.G., & Mazaleki, J.L. (1993). The role of attention in the treatment of attention-maintained self-injurious behavior: Noncontingent reinforcement and differential reinforcement of other behavior. *Journal of Applied Behavior Analysis*, 26, 9-21.