

AFIRM

Autism Focused Intervention Resources & Modules

DR

EBP Brief Packet:
Differential Reinforcement

UNC Frank Porter Graham Child Development Institute
Autism Focused Intervention Resources & Modules
Savage, M., & AFIRM Team, 2024

Frank Porter Graham Child Development Institute

The National Professional Development Center on Autism

The National Clearinghouse on Autism Evidence & Practice
NCAEP • BRIDGING PRACTICE AND SCIENCE

Overview of Content

1. **Table of DR Contents:** This list details the specific DR resources that apply to Differential Reinforcement.
2. **What is DR:** A quick summary of salient features of Differential Reinforcement, including what it is, who it can be used with, what skills it has been used with, and settings for instruction.
3. **Evidence-base:** The evidence-base details the National Clearinghouse on Autism Evidence and Practice (NCAEP) criteria for inclusion as an evidence-based practice and the specific studies that meet the criteria for Differential Reinforcement.
4. **Planning Checklist:** This checklist details the steps for planning for Differential Reinforcement, including what prerequisite learning of practices are needed, collecting baseline data of the interfering behavior if needed, and what materials/resources are needed.
5. **Other Resources:** Other resources may include decision trees, checklists, and/or template forms that will support the use of Differential Reinforcement.
6. **Step-by-Step Guide:** Use this guide as an outline for how to plan for, use, and monitor Differential Reinforcement. Each step includes a brief description as a helpful reminder while learning the process.
7. **Implementation Checklist:** Use this checklist to determine if Differential Reinforcement are being implemented as intended.
8. **Monitoring Progress Checklist:** Use this form as a method for collecting and analyzing data to determine if the learner on the spectrum is making progress towards the interfering behavior.
9. **Tip Sheet for Professionals:** Use this tip sheet, intended for professionals working with learners on the spectrum, as a supplemental resource to help provide basic information about Differential Reinforcement.
10. **Parent Guide:** Use this guide intended for parents or family members of learners on the spectrum to help them understand basic information about Differential Reinforcement and how it is being used with their child.
11. **Additional Resources:** This list provides additional information for learning more about Differential Reinforcement as well as resources.
12. **CEC Standards:** This list details the specific CEC standards that apply to Differential Reinforcement.
13. **Glossary:** This glossary contains key terms that apply specifically to Differential Reinforcement.
14. **References:** This list details the specific references used for developing this DR module in numerical order.

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Differential Reinforcement

WHAT IS DR?

Differential reinforcement (DR) is an application of reinforcement designed to reduce the occurrence of interfering behaviors (e.g., tantrums, aggression, self-injury, stereotypic behavior). The rationale for differential reinforcement is that by (a) reinforcing the nonoccurrence or decreased occurrence of interfering behaviors or (b) reinforcing behaviors that are more functional or incompatible with the interfering behavior, then interfering behaviors will decrease.

EVIDENCE-BASE:

Based upon the 2020 systematic review conducted by the National Clearinghouse on Autism Evidence and Practice (NCAEP), Differential Reinforcement is a focused intervention that meets the evidence-based practice criteria with 58 single case design. Differential Reinforcement has been effective for early intervention (0-2 years), preschoolers (3-5 years), elementary school learners (6-11 years), middle school learners (12-14 years), high schoolers (15-18 years), and young adults (19-22 years) on the spectrum. Studies included the 2020 EBP report (Steinbrenner et al., 2020) detail how Differential Reinforcement can be used to effectively address the following outcomes for a target skill/behavior/goal: academic, adaptive, behavior, communication, joint attention, motor, play, school readiness, and social.

HOW IS DR BEING USED?

Differential Reinforcement can be used by a variety of professionals, including teachers, special educators, therapists, paraprofessionals, and early interventionists in educational and community-based environments. Parents and family members also can use Differential Reinforcement in the home.

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Evidence-base

The National Clearinghouse on Autism Evidence and Practice has adopted the following criteria to determine if a practice is evidence-based. The 2020 EBP report (Steinbrenner et al., 2020) provides more information about the systematic review process.

Efficacy must be established through high-quality, peer-reviewed research in scientific journals using:

- At least 2 randomized or quasi-experimental group design studies, or
- At least 5 single subject/case design studies, or a
- Combination of evidence of 1 randomized or quasi-experimental group design study and 3 single subject/case design studies

OVERVIEW:

Based upon the 2020 systematic review conducted by the National Clearinghouse on Autism Evidence and Practice (NCAEP), Differential Reinforcement is a focused intervention that meets the evidence-based practice criteria with 58 single case design. Differential Reinforcement has been effective for early intervention (0-2 years), preschoolers (3-5 years), elementary school learners (6-11 years), middle school learners (12-14 years), high schoolers (15-18 years), and young adults (19-22 years) on the spectrum. Studies included the 2020 EBP report (Steinbrenner et al., 2020) detail how Differential Reinforcement can be used to effectively address the following outcomes for a target skill/behavior/goal: academic/pre-academic, adaptive/self-help, behavior, communication, joint attention, motor, play, school readiness, and social.

In the table below, the instructional outcomes identified by the evidence base are shown by age of participants.

Age	Academic	Adaptive	Behavior	Communication	Joint Attention	Motor	Play	School Readiness	Social
0-2		Yes	Yes	Yes					
3-5	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
6-11	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12-14			Yes	Yes		Yes		Yes	Yes
15-18		Yes	Yes						
19-22			Yes						

EARLY INTERVENTION (0-2 YEARS):

*** McGinnis, A. A., Blakely, E. Q., Harvey, A. C., Hodges, A. C., & Rickards, J. B. (2013). The behavioral effects of a procedure used by pediatric occupational therapists. *Behavioral Interventions, 28*(1), 48-57. https://doi.org/10.1002/bin.1355**

* Najdowski, A. C., Wallace, M. D., Reagon, K., Penrod, B., Higbee, T. S., & Tarbox, J. (2010). Utilizing a home-based parent training approach in the treatment of food selectivity. *Behavioral Interventions*, *25*(2), 89-107. https://doi.org/10.1002/bin.298

*** Robertson, R. E., Wehby, J. H., & King, S. M. (2013). Increased parent reinforcement of spontaneous requests in children with autism spectrum disorder: effects on problem behavior. *Research in Developmental Disabilities, 34*(3), 1069-1082. https://doi.org/10.1016/j.ridd.2012.12.011**

PRESCHOOL (3-5 YEARS):

Allison, J., Wilder, D. A., Chong, I., Lugo, A., Pike, J., & Rudy, N. (2012). A comparison of differential reinforcement and noncontingent reinforcement to treat food selectivity in a child with autism. *Journal of Applied Behavior Analysis, 45*(3), 613-617.

*** Brogan, K. M., Rapp, J. T., Sennott, L. A., Cook, J. L., & Swinkels, E. (2017). Further analysis of the predictive effects of a free-operant competing stimulus assessment on stereotypy. *Behavior Modification, 42*(4), 543-583. https://doi.org/10.1177/0145445517741476**

Call, N. A., Pabico, R. S., Findley, A. J., & Valentino, A. L. (2011). Differential reinforcement with and without blocking as treatment for elopement. *Journal of Applied Behavior Analysis*, *44*(4), 903-907. https://doi.org/10.1901/jaba.2011.44-903

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* Charlop-Christy, M. H., & Haymes, L. K. (1996). Using obsessions as reinforcers with and without mild reductive procedures to decrease inappropriate behaviors of children with autism. *Journal of Autism and Developmental Disorders*, *26*(5), 527-546. https://doi.org/10.1007/BF02172274

*** Chezan, L., Drasgow, E., Legg, J., & Hollborn, A. (2016). Effects of conditional discrimination training and choice opportunities on manding for two young children with Autism Spectrum Disorder and language delays. *Journal of Developmental and Physical Disabilities, 28*(4), 557-579. https://doi.org/10.1007/s10882-016-9493-1**

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Falcomata, T. S., Muething, C. S., Roberts, G. J., Hamrick, J., & Shpall, C. (2016). Further evaluation of latency-based brief functional analysis methods: An evaluation of treatment utility. *Developmental Neurorehabilitation, 19*(2), 88-94.

*** Fisher, W. W., Pawich, T. L., Dickes, N., Paden, A. R., & Toussaint, K. (2014). Increasing the saliency of behavior-consequence relations for children with autism who exhibit persistent errors. *Journal of Applied Behavior Analysis, 47*(4), 738-48. https://doi.org/10.1002/jaba.172**

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*** Lanovaz, M. J., Rapp, J. T., Maciw, I., Pregent-Pelletier, E., Dorion, C., Ferguson, S., & Saade, S. (2014). Effects of multiple interventions for reducing vocal stereotypy: Developing a sequential intervention model. *Research in Autism Spectrum Disorders, 8*(5), 529-545. https://doi.org/10.1016/j.rasd.2014.01.009**

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*** Plavnick, J. B., Mariage, T., Englert, C. S., Constantine, K., Morin, L., & Skibbe, L. (2014). Promoting independence during computer assisted reading instruction for children with autism spectrum disorders. *Revista Mexicana de Analisis de la Conducta, 40*(2), 85-105. https://doi.org/10.5514/rmac.v40.i2.63667**

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*** Rapp, J. T., Cook, J. L., McHugh, C., & Mann, K. R. (2016). Decreasing stereotypy using NCR and DRO with functionally matched stimulation: Effects on targeted and non-targeted stereotypy. *Behavior Modification, 41*(1), 45-83. https://doi.org/10.1177/0145445516652370**

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*** Wiskow, K. M., Donaldson, J. M., & Matter, A. L. (2017). An evaluation of generalization of compliance across response types. *Behavior Analysis: Research and Practice, 17*(4), 402-420. https://doi.org/10.1037/bar0000087**

ELEMENTARY SCHOOL (6-11 YEARS):

Bergstrom, R., Tarbox, J., & Gutshall, K. A. (2011). Behavioral intervention for domestic pet mistreatment in a young child with autism. *Research in Autism Spectrum Disorders*, *5*(1), 218-221. https://doi.org/ 10.1016/j.rasd.2010.04.002

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* Charlop-Christy, M. H., & Haymes, L. K. (1996). Using obsessions as reinforcers with and without mild reductive procedures to decrease inappropriate behaviors of children with autism. *Journal of Autism and Developmental Disorders*, *26*(5), 527-546. https://doi.org/10.1007/BF02172274

*** Chezan, L., Drasgow, E., Legg, J., & Hollborn, A. (2016). Effects of conditional discrimination training and choice opportunities on manding for two young children with Autism Spectrum Disorder and language delays. *Journal of Developmental and Physical Disabilities, 28*(4), 557-579. https://doi.org/10.1007/s10882-016-9493-1**

Cook, J. L., Rapp, J. T., & Schulze, K. A. (2015). Differential negative reinforcement of other behavior to increase wearing of a medical bracelet. *Journal of Applied Behavior Analysis, 48*(4), 901-906. https://doi.org/10.1002/jaba.228

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*** Fisher, W. W., Pawich, T. L., Dickes, N., Paden, A. R., & Toussaint, K. (2014). Increasing the saliency of behavior-consequence relations for children with autism who exhibit persistent errors. *Journal of Applied Behavior Analysis, 47*(4), 738-48. https://doi.org/10.1002/jaba.172**

* Hammond, J. L., Iwata, B. A., Fritz, J. N., & Dempsey, C. M. (2011). Evaluation of fixed momentary DRO schedules under signaled and unsignaled arrangements. *Journal of Applied Behavior Analysis*, *44*(1), 69-81. https://doi.org/10.1901/jaba.2011.44-69

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Lambert, J. M., Clohisy, A. M., Barrows, S. B., & Houchins-Juarez, N. J. (2017). Compound-schedules approaches to noncompliance: Teaching children when to ask and when to work. *Journal of Behavioral Education, 26*(2), 201-220. https://doi.org/10.1007/s10864-016-9260-5

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Marcus, A., Sinnott, B., Bradley, S., & Grey, I. (2010). Treatment of idiopathic toe-walking in children with autism using GaitSpot auditory speakers and simplified habit reversal. *Research in Autism Spectrum Disorders*, *4*(2), 260-267. https://doi.org/10.1016/j.rasd.2009.09.012

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* Newman, B., Tuntigian, L., Ryan C. S., & Reinecke, D. R. (1997). Self-management of a DRO procedure by three students with autism. *Behavioral Interventions*, *12*(3), 149-156. https://doi.org/10.1002/(SICI)1099-078X(199707)12:3<149::AID-BRT173>3.0.CO;2-M

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* Piazza, C. C., Moes, D. R., & Fisher, W. W. (1996). Differential reinforcement of alternative behavior and demand fading in the treatment of escape-maintained destructive behavior. *Journal of Applied Behavior Analysis*, *29*(4), 569-572. https://doi.org/10.1901/jaba.1996.29-569

*** Plavnick, J. B., Mariage, T., Englert, C. S., Constantine, K., Morin, L., & Skibbe, L. (2014). Promoting independence during computer assisted reading instruction for children with autism spectrum disorders. *Revista Mexicana de Analisis de la Conducta, 40*(2), 85-105. https://doi.org/10.5514/rmac.v40.i2.63667**

*** Rapp, J. T., Cook, J. L., McHugh, C., & Mann, K. R. (2016). Decreasing stereotypy using NCR and DRO with functionally matched stimulation: Effects on targeted and non-targeted stereotypy. *Behavior Modification, 41*(1), 45-83. https://doi.org/10.1177/0145445516652370**

Reed, G. K., Ringdahl, J. E., Wacker, D. P., Barretto, A., & Andelman, M. S. (2005). The effects of fixed-time and contingent schedules of negative reinforcement on compliance and aberrant behavior. *Research in Developmental Disabilities*, *26*(3), 281-295. https://doi.org/10.1016/j.ridd.2004.01.004

*** Reeves, L. M., Umbreit, J., Ferro, J. B., & Liaupsin, C. J. (2017). The role of the replacement behavior in function-based intervention. *Education and Training in Autism and Developmental Disabilities, 52*(3), 305-316. https://doi.org/10.2307/26420402**

Rozenblat, E., Brown, J. L., Brown, A. K., Reeve, S. A., & Reeve, K. F. (2009). Effects of adjusting DRO schedules on the reduction of stereotypic vocalizations in children with autism. *Behavioral Interventions*, *24*(1), 1-15. https://doi.org/10.1002/bin.270

Schmidt, J. D., Bednar, M. K., Willse, L. V., Goetzel, A. L., Concepcion, A., Pincus, S. M., Hardesty, S. L., & Bowman, L. G. (2017). Evaluating treatments for functionally equivalent problem behavior maintained by adult compliance with mands during interactive play. *Journal of Behavioral Education, 26*(2), 169-187. https://doi.org/10.1007/s10864-016-9264-1

*** Schmidt, J. D., Long, A., Goetzel, A. L., Tung, C., Pizarro, E., Phillips, C., & Hausman, N. (2017). Decreasing pica attempts by manipulating the environment to support prosocial behavior. *Journal of Developmental and Physical Disability, 29*(5), 683-697. https://doi.org/10.1007/s10882-017-9548-y**

Thompson, M. J., McLaughlin, T. F., & Derby, K. M. (2011). The use of differential reinforcement to decrease the inappropriate verbalizations of a nine-year-old girl with autism. *Electronic Journal of Research in Educational Psychology*, *9*(1), 183-196. https://doi.org/10.25115/ejrep.v9i23.1433

Vladescu, J. C., & Kodak, T. (2016). The effect of a multiple-schedule arrangement on mands of a child with autism. *Behavioral Interventions, 31*(1), 3-11. https://doi.org/10.1002/bin.1422

*** Watts, A. C., Wilder, D. A., Gregory, M. K., Leon, Y., & Ditzian, K. (2013). The effect of rules on differential reinforcement of other behavior. *Journal of Applied Behavior Analysis, 46*(3), 680-684. https://doi.org/10.1002/jaba.53**

*** Wiskow, K. M., Donaldson, J. M., & Matter, A. L. (2017). An evaluation of generalization of compliance across response types. *Behavior Analysis: Research and Practice, 17*(4), 402-420. https://doi.org/10.1037/bar0000087**

MIDDLE SCHOOL (12-14 YEARS):

Adelinis, J. D., Piazza, C. C., & Goh, H. L. (2001). Treatment of multiply controlled destructive behavior with food reinforcement. *Journal of Applied Behavior Analysis*, *34*(1), 97-100. https://doi.org/10.1901/jaba.2001.34-97

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* Hammond, J. L., Iwata, B. A., Fritz, J. N., & Dempsey, C. M. (2011). Evaluation of fixed momentary DRO schedules under signaled and unsignaled arrangements. *Journal of Applied Behavior Analysis*, *44*(1), 69-81. https://doi.org/10.1901/jaba.2011.44-69

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* Piazza, C. C., Moes, D. R., & Fisher, W. W. (1996). Differential reinforcement of alternative behavior and demand fading in the treatment of escape-maintained destructive behavior. *Journal of Applied Behavior Analysis*, *29*(4), 569-572. https://doi.org/10.1901/jaba.1996.29-569

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HIGH SCHOOL (15-18 YEARS):

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Notes: * denotes the study has participants in at least two age ranges
Bold denotes new studies since 2011 (2012 till 2017)

Differential Reinforcement Types

DIFFERENTIAL REINFORCEMENT OF ALTERNATIVE BEHAVIOR (DRA):

- Reduce the interfering behavior by reinforcing a functional alternative behavior (e.g., main goal is to replace the interfering behavior)
- Reinforcement is provided when the learner is engaging in a specific desired behavior other than the interfering behavior (continuous reinforcement, then thin to intermittent reinforcement)
- Use when there is an appropriate alternative behavior, but it could co-exist with the interfering behavior (using break card instead of screaming, raising hand instead of just talking, greeting peers instead of hitting)
- Example: Student receives a reinforcer when he raises his hand to answer the teacher's question

DIFFERENTIAL REINFORCEMENT OF INCOMPATIBLE BEHAVIOR (DRI):

- Reduce the interfering behavior by reinforcing a functional incompatible behavior (e.g., main goal is to replace the interfering behavior)
- Reinforcement is provided when the learner is engaging in a behavior that is physically impossible to do while exhibiting the interfering behavior (continuous reinforcement, then thin to intermittent reinforcement)
- Use when there is an appropriate alternative behavior that can't co-exist with the interfering behavior (out-of-seat vs seated, screaming vs whispering, verbal aggression vs kind words, running vs walking)
- Example: Student receives a reinforcer when she walks in the hallway

DIFFERENTIAL REINFORCEMENT OF LOW RATES OF BEHAVIOR (DRL):

- Reduce the number of interfering behavior occurrences to acceptable levels (e.g., main goal is to reduce the interfering behavior)
- Reinforcement is provided if learner engagement in the interfering behavior was at or below a predetermined criterion (e.g., if a learner sharpens his pencil 6 times per 40-minute class period, a good place to start would be to set the initial criterion to receive a reinforcer at 6 or fewer during each 40-minute class period. The response criterion gradually decreases to further decrease the interfering behavior rate. Response criterion will continue to decrease gradually until the learner is continually engaging in the interfering behavior at the predetermined, more appropriate rate.)
- Use when the interfering behavior is non-violent, not self-destructive, irritating or disruptive at high frequency, but could be tolerable or even appropriate if displayed less frequently (asking questions, burping, cursing)
- Example: Student receives a reinforcer when she uses the water fountain 5 or less times during the school day

DIFFERENTIAL REINFORCEMENT OF OTHER BEHAVIOR (DRO):

- Reduce interfering behavior to zero occurrences by increasing the amount of time between occurrences (e.g., main goal is to eliminate the interfering behavior)
- Reinforcement is provided when the learner is not engaging in the interfering behavior (e.g., DRO fixed-time schedule of 1-minute means that reinforcement is delivered every 1 minute, contingent upon the absence of the interfering behavior during that minute. Alternatively, a variable DRO schedule might consist of 15, 30, 45, 60, and 90 seconds, arranged to occur in a random order, with an average inter-response time of 1-minute.)
- Use when the interfering behavior is unacceptable (hitting peers, self-injurious, elopement) and/or when the learner has other appropriate behaviors
- Example: Student receives a reinforcer when he goes without hitting himself for five minutes

Data Collection: A-B-C

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Interfering Behavior: _____
Directions: Collect data what happens directly before the behavior (antecedent), describe the behavior, and determine what happens directly after the behavior (consequence).

Date	Start Time	Stop Time	Antecedent	Behavior	Consequence

ANECDOTAL NOTES:

Functional Behavior Assessment

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Interfering Behavior: _____
Directions: Complete this checklist to determine the function of the interfering behavior.

DEFINE THE INTERFERING BEHAVIOR:

1. Where does the behavior occur?
2. With whom does the behavior occur?
3. When does the behavior occur?
4. What activity is the learner participating in when the behavior occurs?
5. How long has the behavior been interfering with the learner's development and learning?
6. Does the behavior involve aggression or damage to property?
7. What are other students and adults doing when the behavior occurs?
8. What is the proximity of other students and adults when the behavior occurs?
9. What is the noise level of in the environment when the behavior occurs?
10. Number of individuals in the area:
11. Other environmental conditions:
12. Does the behavior occur because the learner is being asked to demonstrate a skill that he/she cannot perform (e.g., talking with peer, completing a difficult math assignment
13. Does the learner exhibit other behaviors immediately before the behavior occurs (antecedents)?
14. What happens immediately after the interfering behavior occurs (consequences)?

DETERMINE THE FUNCTION OF THE BEHAVIOR:

15. To get or obtain:
- ❑ Attention
- ❑ Food
- ❑ Toys
- ❑ Hugs
- ❑ Sensory stimulation
- ❑ Other: _____

To escape or avoid:
- ❑ Attention
- ❑ Difficult task/activity
- ❑ Undesirable activity
- ❑ Social stimulation
- ❑ Sensory stimulation
- ❑ Other: _____

DEVELOP HYPOTHESIS STATEMENT:

16. Antecedents & Consequences:

17. Interfering behavior:

18. Function of behavior:

HYPOTHESIS STATEMENT:

Reinforcer Sampling & Checklist

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Goal/Behavior/Skill: _____
Directions: Use this worksheet and checklist to identify and select reinforcers/rewards based on the learner's preferred items, interests, and activities for **Positive Reinforcement** and **Token Economy**.

CONDUCT A REINFORCER SAMPLING:

1. Sit in front of the learner and hold up two items. Ask the learner to "Pick one."
2. Wait 10 seconds for the learner to indicate selection in manner that is appropriate for the learner (e.g., verbalization, pointing, using an augmentative communication device).
3. Place the selected object in a container for learner's selection and non-selected item in the not selected container.
4. Repeat steps 1 through 3 until half of the objects presented are selected.

Item 1	Selected?	Item 2	Selected?
	Yes No		Yes No
	Yes No		Yes No
	Yes No		Yes No
	Yes No		Yes No
	Yes No		Yes No
	Yes No		Yes No
	Yes No		Yes No

LIST SELECTED REINFORCERS:

LIST POTENTIAL REINFORCERS:

AGE APPROPRIATE?

1. What natural reinforcers could be used?

   Yes No

2. What activities, objects, and/or foods does the learner select independently?

   Yes No

3. What phrases or gestures seem to produce a pleasant response from the learner?

   Yes No

4. What does the learner say they would like to work for (if appropriate)?

   Yes No

5. What reinforcers were identified by parents/family members and/or team members as being successful in the past?

   Yes No

6. Does the learner require additional adaptations/ modifications/supports? Such as visual supports or a communication device?

   Yes No

7. Have reinforcers/rewards for the learner been identified based on the learner's interests/preferred items and/or activities?

   Yes No

8. Are additional materials and/or resources for using Functional Behavior Assessment ready and available?

   Yes No

FOODS FOR SNACKS/MEALTIME ROUTINES:

- ❑ Cheese
- ❑ Chicken Nuggets
- ❑ Chips
- ❑ French Fries
- ❑ Fruit
- ❑ Goldfish
- ❑ Ice Cream
- ❑ Pizza
- ❑ Pretzels
- ❑ Other:
- ❑ Other:
- ❑ Other:

GAMES FOR PLAY/RECESS ROUTINES:

- ❑ Burrito games with a blanket
- ❑ Chase
- ❑ Pat-a-Cake
- ❑ Peek-a-Boo
- ❑ Tickles
- ❑ Other:
- ❑ Other:
- ❑ Other:
- ❑ Other:

TOYS FOR PLAY/RECESS ROUTINES:

- ❑ Books
- ❑ Cars/Trains/Trucks
- ❑ Computer
- ❑ Doll house
- ❑ Legos
- ❑ Noisy toys
- ❑ Phones
- ❑ Puzzles
- ❑ Remote controlled toys
- ❑ Other:
- ❑ Other:
- ❑ Other:

SPECIAL INTERESTS FOR ACTIVITIES/ROUTINES:

- ❑ Book Character:
- ❑ Book:
- ❑ Cars, Trains, Trucks
- ❑ Computers/Technology
- ❑ Dinosaurs
- ❑ Letters
- ❑ Movie Character:
- ❑ Movie:
- ❑ Music
- ❑ Numbers
- ❑ Real-Life Person:
- ❑ TV Show Character:
- ❑ TV Show:
- ❑ Video Game:
- ❑ Other:
- ❑ Other:
- ❑ Other:

Planning Checklist

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Interfering Behavior: _____
Directions: Complete this checklist to determine which type of differential reinforcement to use with the learner on the spectrum as well as if DR is ready to be implemented.

PLANNING:

- ❑ Has the interfering behavior been identified?
- ❑ Has baseline data and/or a functional behavior assessment been collected through direct observation of the learner?
- ❑ Is the target skill/behavior/goal measurable and observable? Does it clearly state **what** the target skill/behavior/goal is, **when** it will occur, and **how** team members/observers will know it has been mastered?
- ❑ Is Differential Reinforcement appropriate for the learner's interfering behavior?
- ❑ Does the learner require additional adaptations/modifications/supports? Such as a communication device?
- ❑ Have reinforcers/rewards for the learner been identified based on the learner's interests/preferred items and/or activities?
- ❑ Are additional materials and/or resources for using Differential Reinforcement ready and available?

SELECT DIFFERENTIAL REINFORCEMENT PROCEDURE:

- ❑ Alternative (DRA)
- ❑ Incompatible (DRI)
- ❑ Low Rates (DRL)
- ❑ Other Behavior (DRO)

DETERMINE REINFORCEMENT SCHEDULE:

- ❑ Interval: Fixed
- ❑ Interval: Variable
- ❑ Ratio: Fixed
- ❑ Ratio: Variable

Data Collection: Frequency

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____ **Setting:** _____
Operational Definition of Interfering Behavior: _____

Directions: Collect data on the frequency of the learner demonstrating the interfering behavior to determine if the learner is making progress.

Date	Start Time	Stop Time	Total Time (min)	Tally	Tally Total	Rate	Before, During, or After Reinforcement
							❑ Before ❑ During ❑ After
							❑ Before ❑ During ❑ After
							❑ Before ❑ During ❑ After
							❑ Before ❑ During ❑ After
							❑ Before ❑ During ❑ After
							❑ Before ❑ During ❑ After
							❑ Before ❑ During ❑ After
							❑ Before ❑ During ❑ After
							❑ Before ❑ During ❑ After
							❑ Before ❑ During ❑ After

Data Collection: Duration

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Setting: _____ **Activity:** _____
Operational Definition of Interfering Behavior: _____

Directions: Collect data on the duration of the learner demonstrating the interfering behavior to determine if the learner is making progress.

Date	Start Time	Stop Time	Total Time (min & sec)	Before, During, or After Reinforcement
				❑ Before ❑ During ❑ After
				❑ Before ❑ During ❑ After
				❑ Before ❑ During ❑ After
				❑ Before ❑ During ❑ After
				❑ Before ❑ During ❑ After
				❑ Before ❑ During ❑ After
				❑ Before ❑ During ❑ After
				❑ Before ❑ During ❑ After
				❑ Before ❑ During ❑ After
				❑ Before ❑ During ❑ After

Data Collection: Frequency (Intervals)

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Operational Definition of Interfering Behavior: _____

_____

Total Observation Time: _____ **Length of Each Interval:** _____
Directions: Collect data when the learner demonstrating the interfering behavior at time intervals (light green cells) to determine if the learner is making progress.

	Time Intervals											
Date	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**%**	**Before, During, or After**
												❑ Before ❑ During ❑ After
												❑ Before ❑ During ❑ After
												❑ Before ❑ During ❑ After
												❑ Before ❑ During ❑ After
												❑ Before ❑ During ❑ After
												❑ Before ❑ During ❑ After
												❑ Before ❑ During ❑ After
												❑ Before ❑ During ❑ After
												❑ Before ❑ During ❑ After
												❑ Before ❑ During ❑ After

Monitoring Progress Checklist

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Interfering Behavior: _____
Directions: Complete this checklist to determine if the learner is making progress with using Differential Reinforcement.

MONITORING PROGRESS:

- ❑ Is the target skill or behavior well defined?
- ❑ Is the skill or behavior measurable and observable?
- ❑ Has data been collected and analyzed?
- ❑ Is the skill or behavior too difficult for the learner?
- ❑ Was Differential Reinforcement used with fidelity?
- ❑ Are there too many reinforcers?
- ❑ Are there too few reinforcers?
- ❑ Are all team members using Differential Reinforcement in a consistent manner?
- ❑ Is Differential Reinforcement occurring at a sufficient level to maintain the behavior or target skill?

ANECDOTAL NOTES:

Step-by-Step Guide

This step-by-step practice guide outlines how to plan for, use, and monitor Differential Reinforcement.



BEFORE YOU BEGIN…

Each of the following points is important to address so that you can be sure Differential Reinforcement is likely to address the interfering behavior of your learner on the spectrum.

HAVE YOU FOUND OUT MORE INFORMATION ABOUT…?

- ❑ Identifying the interfering behavior…?
- ❑ Collecting baseline data through direct observation…?
- ❑ Establishing a target goal or outcome that clearly states when the behavior will occur, what the target goal or outcome is, and how team members and/or observers will know when the skill is mastered…?

If the answer to any of the above questions is 'No,' review the process of how to select an appropriate EBP (https://afirm.fpg.unc.edu/selecting-EBP).

For more information about Differential Reinforcement, please visit https://afirm.fpg.unc.edu/ .

STEP 1: PLANNING FOR DR

The planning step details the initial steps and considerations involved to prepare for using Differential Reinforcement with a learner on the spectrum.

1. **Identify and define interfering behavior through an FBA**
   - To assist in identifying a behavior that interferes with learning and/or daily function, team members should complete a functional behavior assessment (FBA).
   - Team members should gather information from each other regarding the topography, frequency, intensity, location, and duration of the interfering behavior.

   Use the **Data Collection: ABC** and **FBA Worksheet** to determine the function of the interfering behavior.

   ✱Check out the Functional Behavior Assessment module to learn more about this process.

Keep in mind that the four **Differential Reinforcement** procedures are:

- Alternative (DRA)
- Incompatible (DRI)
- Low Rates (DRL)
- Other(DRO) Behaviors

While each procedure is different, the practice guide is applicable to all. When unique features are tied to a specific procedure, we will identify them through examples or cautions.

2. **Select a differential reinforcement strategy**
   When deciding which differential reinforcement procedure to use, determine what the main goal is for the interfering behavior. If the main goal is to eliminate the behavior and not introduce a replacement, then choose DRO. If the main goal is to reduce the interfering behavior, then choose DRL. If the main goal is to substitute the interfering behavior with a more functional and appropriate behavior, then choose DRA or DRI.
   - If using DRI, also select incompatible behavior.
   - If using DRA, also select alternative behavior.

   Use the **DR Types** to select a procedure.

3. **Collect baseline data on interfering behavior**
   - Collect data in a variety of settings and activities to determine how often the learner is using the interfering behavior.
   - Data sheets will help you collect data on the interfering behavior in order to determine if the trend is stable to begin using differential reinforcement.

   Use the **Frequency Data Sheet** to collect the frequency of an interfering behavior.
   Use the **Duration Data Sheet** to collect the duration of an interfering behavior.
   Use the **Partial Interval Data Sheet** to collect data on an interfering behavior during intervals.

4. **Identify reinforcers**
   - If choosing a DRO or DRL strategy, the reinforcer should be of at least equal strength or motivating value at which is currently maintaining the interfering behavior.
   - If choosing a DRI or DRA strategy, the reinforcer should be the same type and/or equivalent to the reinforcement they received when engaging in the interfering behavior.

5. **Determine schedule of reinforcement**
   The process for determining the schedule of reinforcement is different depending on the differential reinforcement procedure.
   - Schedule of reinforcement for DRO
     1. Determine the average IRT from baseline data.
     2. Start with a slightly smaller interval than the average IRT for the initial DRO interval.
   - Schedule of reinforcement for DRL
     1. Start the initial response criterion at the average occurrences from baseline.
     2. Response criterion will continue to decrease gradually until the learner is continually engaging in the interfering behavior at the predetermined, more appropriate rate.
   - Schedule of reinforcement for DRI/DRA
     1. When first beginning to use a DRI or DRA procedure, use continuous reinforcement.
     2. Once the learner is successful, move to using an intermittent schedule and gradually thin the reinforcement schedule.

6. **Prepare materials**
   - Team members should make sure they have all materials needed for using differential reinforcement such as data collection sheets, timers, and reinforcers.
   - Team members also need to determine if additional materials such as a self-monitoring chart or visuals will be used when implemented differential reinforcement procedures.

STEP 2: USING DR

This step details the process of implementing Differential Reinforcement with a learner on the spectrum.

1. **Meet with the learner**
   - DRI/DRA - Differential Reinforcement of Incompatible Behavior/Differential Reinforcement of Alternative Behavior
     - Discuss the replacement behavior (incompatible or alternative behavior) with the learner and explain how the learner can earn a reinforcer
     - Team members may also have to use an additional strategy such as functional communication training to teach the use of the replacement behavior.
   - DRL - Differential Reinforcement of Low Rates of Behavior
     - Discuss the interfering behavior you want the learner to reduce and explain how the learner can earn a reinforcer
     - Think about what tools you can use to help the learner understand what's being discussed at the meeting (e.g., pictures, video models).
     - If other procedures will be used with DRL, introduce them to the learner (e.g., self-monitoring chart).
     - Inform the learner about the number of instances allowed.
   - DRO - Differential Reinforcement of Other Behaviors
     - Discuss the interfering behavior you want the learner to eliminate and explain how the learner can earn a reinforcer.
     - Think about what tools you can use to help the learner understand what's being discussed at the meeting (e.g., pictures, video models).
     - If other procedures will be used with DRO, introduce them to the learner.

2. **Follow reinforcement schedule**
   - DRI/DRA - Differential Reinforcement of Incompatible Behavior/Differential Reinforcement of Alternative Behavior
     - If the interfering behavior occurs put the behavior on extinction or interrupt and redirect the learner to the replacement behavior.
     - Deliver reinforcer when replacement behavior used and meets criterion
     - If learner is successful with a continuous schedule of reinforcement, move onto an intermittent schedule.
   - DRL - Differential Reinforcement of Low Rates of Behavior
     - At the end of the interval or session if the limit is met, deliver the reinforcer.
     - If the limit is not met, withhold the reinforcer and provide feedback to the learner to help the learner monitor their rate of responding. Inform the learner they did not earn the reinforcer, but that they can try again.
     - As the learner makes progress, gradually reduce the number of responses allowed per session or interval. If using interval DRL, team members can also increase the duration of the interval.

- DRO - Differential Reinforcement of Other Behaviors
  - Deliver reinforcer if criterion is met.
  - If interfering behavior occurs, reset timer or wait for next interval to try again.
  - When the learner engages in the interfering behavior, inform the learner they did not earn the reinforcer, and they can try again.
  - To maintain the reinforcer as a motivator, make sure the learner does not have. access to the reinforcer outside of being used for the DRO procedure.
  - As the learner makes progress, gradually increase the DRO interval.

2. Generalize procedure to other settings

- When the interfering behavior is eliminated or predetermined criterion is met, team members should use DRO, DRL, DRI, or DRA procedures in additional settings or different times in the learner's natural environments.
- Having different team members such as teachers, the speech pathologist, and paraprofessionals use the DRO, DRL, DRI, or DRA procedure can also help generalize the intervention effects.

STEP 3: MONITORING DR

The following step details how to monitor the use of Differential Reinforcement with a learner on the spectrum and how to determine next steps based on the data.

1. Collect and analyze data

By collecting data on target behaviors and skills, team members are able to determine if the learner is making progress.

Use the **Frequency Data Sheet** to collect the frequency of an interfering behavior.
Use the **Duration Data Sheet** to collect the duration of an interfering behavior.
Use the **Partial Interval Data Sheet** to collect data on an interfering behavior during intervals.

2. Adjust reinforcement schedule based on performance criteria

- For DRI/DRA, if using a continuous schedule move to an intermittent schedule and continue to fade reinforcers.
- If using DRL, decrease the number of allowances as the learner is successful.
- If using DRO, increase the interval as the learner is successful.
- If the interfering behavior is not decreasing, team members can work together to determine potential solutions to issues.

3. Determine next steps based on learner progress

Collecting data will help team members decide about the effectiveness of using Differential Reinforcement and whether the learner on the spectrum is making progress. If a learner is making progress based upon data collected, team members should continue to use the selected strategies.

If team members determine that the learner is not making progress, consider the following:

- Is the target skill or behavior well defined?
- Is the skill or behavior measurable and observable?
- If using DRI or DRA, does the incompatible/alternative behavior need to be taught?
- Was differential reinforcement used with fidelity?
- If using DRO, DRL, or DRI, is the reinforcer strong enough?
- If using DRA, does the reinforcer provide the same function as the interfering behavior?
- Have you tried adjusting the reinforcement schedule?
- Are all team members using differential reinforcement consistently?

If these issues have been addressed and the learner on the spectrum continues not to show progress, consider selecting a different evidence-based practice to use with the learner on the spectrum.

Implementation Checklist

BEFORE YOU START, HAVE YOU…?

- ❑ Identifying the interfering behavior…?
- ❑ Collecting baseline data through direct observation…?
- ❑ Establishing a target goal or outcome that clearly states when the behavior will occur, what the target goal or outcome is, and how team members and/or observers will know when the skill is mastered…?

If the answer to any of the above questions is 'No,' review the process of how to select an appropriate EBP (https://afirm.fpg.unc.edu/selecting-EBP).

	Observation:	**1**	**2**	**3**	**4**	**5**
	Date:					
	Observer's Initials:					
	STEP 1: PLANNING					
1.1	Conduct a functional behavior assessment					
1.2	Select a differential reinforcement strategy: **DRA, DRI, DRL,** or **DRO**					
1.2a	If applicable, select an alternative behavior (DRA) or incompatible behavior (DRI)					
1.3	Collect baseline data					
1.4	Identify reinforcers					
1.5	Determine schedule of reinforcement					
1.6	Prepare materials					
	STEP 2: USING					
2.1	Meet with the learner					
2.2	Follow reinforcement schedule					
2.3	Generalize selected DR strategy to other settings and times					
	STEP 3: MONITORING					
3.1	Collect data on target behaviors					
3.2	Adjust reinforcement schedule based on performance criteria					
3.3	Determine next steps based on learner progress					

Tip Sheet for Professionals

DIFFERENTIAL REINFORCEMENT …

- Is a focused evidence-based practice for children and youth on the spectrum from 0-22 years old that can be implemented in multiple settings.
- Can be used by teachers and team members (paraprofessionals, speech pathologists, parents) in school, community, and home environments.



WHY USE WITH LEARNERS ON THE SPECTRUM?

- Differential reinforcement decreases interfering behaviors
- Differential reinforcement reinforcers learners for not engaging in the interfering behavior (DRO), spending less time engaged in the interfering behavior (DRL), and/or spending time engaged in more appropriate behavior choices (DRA/DRI).

TIPS:

- Collect data on the interfering behavior and establish performance criteria.
- Choose a differential reinforcement procedure appropriate for both the learner and the behavior.
- Reinforce the learner consistently, following the schedule of reinforcement.

INSTRUCTIONAL OUTCOMES:

The evidence-base for Differential Reinforcement supports its use to address the following outcomes, according to age range, in the table below:

Age	Academic	Adaptive	Behavior	Communication	Joint Attention	Motor	Play	School Readiness	Social
0-2		Yes	Yes	Yes					
3-5	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
6-11	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12-14			Yes	Yes		Yes		Yes	Yes
15-18		Yes	Yes						
19-22			Yes						

STEPS FOR IMPLEMENTING:

1. **PLAN**
   - Conduct a functional behavior assessment
   - Select a differential reinforcement strategy: DRA, DRI, DRL, or DRO
   - If applicable, select an alternative behavior (DRA) or incompatible behavior (DRI)
   - Collect baseline data
   - Identify reinforcers
   - Determine schedule of reinforcement
   - Prepare materials

2. **USE**
   - Meet with the learner
   - Follow reinforcement schedule
   - Generalize selected DR strategy to other settings and times

3. **MONITOR**
   - Collect and analyze data on target behaviors
   - Adjust reinforcement schedule based on performance criteria
   - Determine next steps based on learner progress



Differential Reinforcement
DR

This sheet was designed as a supplemental resource to provide basic information about Differential Reinforcement for professionals working with learners on the spectrum.

For more information about this selected evidence-based practice, please visit https://afirm.fpg.unc.edu/.

Parent's Guide

WHAT IS DR?

- Differential Reinforcement is a focused evidence-based practice for children and youth on the spectrum from 0-22 years old.
- Differential reinforcement is a practice used to help decrease behaviors that interfere with learning and daily functioning.



WHY USE THIS DR WITH MY CHILD?

- Differential reinforcement is needed when a challenging behavior regularly interferes with your child's safety, the safety of others, and the learning process.
- Research studies have shown that Differential Reinforcement has been used effectively with many age groups to achieve outcomes in the following areas: academic/pre-academic, adaptive/self-help, behavior, communication, joint attention, motor, play, school readiness, and social.

WHAT ACTIVITIES CAN I DO AT HOME?

- Notice when your child has a behavior that interferes with their learning or safety. Think about what happened before or after the behavior and share your notes and observations with your IEP team. This will help the team develop possible reasons for the purpose of the behavior and help choose a differential reinforcement strategy.
- Create a list of favorite activities or objects to be possible reinforcers that can be used at home or in school.
- If the same behavior is happening at home and school, use the same differential reinforcement strategy in both settings.

Differential Reinforcement DR

This parent introduction to DR was designed as a supplemental resource to help answer questions about Differential Reinforcement.

To find out more about how this DR is being used with your child, please talk with:

_____

For more information about this selected evidence-based practice, please visit https://afirm.fpg.unc.edu/.

Additional Resources

APPS:

Icon	Developer	Name	Available	Pricing
	Track and Share Apps, LLC	*Autism Tracker*	iPhone iPad	$9.99

CEC Standards

INITIAL PRACTICE-BASED STANDARDS FOR EARLY INTERVENTIONISTS/EARLY CHILDHOOD (0-5 YEARS; CEC, 2020)

Standard 1: Child Development & Early Learning

1.1 Demonstrate an understanding of the impact that different theories and philosophies of early learning and development have on assessment, curriculum, intervention, and instruction decisions.

1.4 Demonstrate an understanding of characteristics, etiologies, and individual differences within and across the range of abilities, including developmental delays and disabilities, their potential impact on children's early development and learning, and implications for assessment, curriculum, instruction, and intervention.

Standard 6: Using Responsive and Reciprocal Interactions, Interventions, and Instruction

6.3 Engage in ongoing planning and use flexible and embedded instructional and environmental arrangements and appropriate materials to support the use of interactions, interventions, and instruction addressing developmental and academic content domains, which are adapted to meet the needs of each and every child and their family.

6.4 Promote young children's social and emotional competence and communication, and proactively plan and implement function-based interventions to prevent and address challenging behaviors.

6.6 Use responsive interactions, interventions, and instruction with sufficient intensity and types of support across activities, routines, and environments to promote child learning and development and facilitate access, participation, and engagement in natural environments and inclusive settings.

6.7 Plan for, adapt, and improve approaches to interactions, interventions, and instruction based on multiple sources of data across a range of natural environments and inclusive settings.

INITIAL PRACTICE-BASED STANDARDS FOR (GRADES K-12; CEC, 2020):

Standard 5: Supporting Learning Using Effective Instruction

5.1 Use findings from multiple assessments, including student self-assessment, which are responsive to cultural and linguistic diversity and specialized as needed, to identify what students know and are able to do. They then interpret the assessment data to appropriately plan and guide instruction to meet rigorous academic and non-academic content and goals for each individual.

5.2 Use effective strategies to promote active student engagement, increase student motivation, increase opportunities to respond, and enhance self-regulation of student learning.

5.3 Use explicit, systematic instruction to teach content, strategies, and skills to make clear what a learner needs to do or think about while learning.

5.6 Plan and deliver specialized, individualized instruction that is used to meet the learning needs of each individual.

Standard 6: Supporting Social, Emotional, and Behavioral Growth

6.1 Use effective routines and procedures to create safe, caring, respectful, and productive learning environments for individuals with exceptionalities.

6.2 Use a range of preventive and responsive practices documented as effective to support individuals' social, emotional, and educational well-being.

6.3 Systematically use data from a variety of sources to identify the purpose or function served by problem behavior to plan, implement, and evaluate behavioral interventions and social skills programs, including generalization to other environments.

ADVANCED PRACTICE-BASED STANDARDS (CEC, 2012):

Standard 3: Programs, Services, and Outcomes

3.1 Design and implement evaluation activities to improve programs, supports, and services for individuals with exceptionalities.

3.2 Use understanding of cultural, social, and economic diversity and individual learner differences to inform the development and improvement of programs, supports, and services for individuals with exceptionalities.

3.3 Apply knowledge of theories, evidence-based practices, and relevant laws to advocate for programs, supports, and services for individuals with exceptionalities.

Glossary

Baseline - information gathered from multiple sources to better understand the target behavior, before using an intervention or practice.

Baseline data - data collected on current performance level prior to implementation of intervention.

Continuous schedule of reinforcement - a schedule of reinforcement in which all occurrences of the target behavior are reinforced.

Differential reinforcement of alternative behavior (DRA) - delivers reinforcer upon the occurrence of a target behavior that is an alternative to the behavior selected for reduction but not necessary topographically dissimilar to the inappropriate behavior

Differential reinforcement of incompatible behavior (DRI) - delivers reinforcer upon the occurrence of a target behavior that is incompatible with or cannot be exhibited at the same time as the inappropriate/interfering behavior

Differential reinforcement of low rates of responding (DRL) - integrates a schedule of reinforcement to yield lower rates of responding of the interfering behavior

Differential reinforcement of other behaviors (DRO) - delivers reinforcer contingently whenever the inappropriate/interfering behavior is not emitted during a specific period of time

Differential reinforcement procedure - the application of reinforcement designed to reduce or eliminate the occurrence of interfering behaviors (e.g., tantrums, aggression, self-injury, stereotypic behavior), resulting in a positive and teaching environment to facilitate learning

Duration data - records how long a learner engages in a particular behavior or skill.

Extinction (EXT) - the removal of reinforcing consequences of a challenging behavior in order to reduce the future occurrence of that behavior.

Fixed-interval schedule of reinforcement - reinforcer is delivered the first time the target behavior is performed, following the elapse of a specified amount of time

Fixed-ratio schedule of reinforcement - reinforcer is delivered on completion of a specified number of correct responses

Frequency data - used to measure how often the learner on the spectrum engages in the target skill or behavior.

Frequency system - data collection system, appropriate when the frequency of the behavior needs to be increased or decreased.

Functional Behavioral Assessment (FBA) - systematic way of determining the underlying function or purpose of a behavior so that an effective intervention plan can be developed.

Generalization - when the target skill or behavior continues to occur when the intervention ends, in multiple settings, and with multiple individuals (e.g., peers, teachers, parents).

Individualized Intervention - an intervention that is planned and implemented in a way specific to the learner receiving the intervention.

Intensity - refers to how severe the behavior is (e.g., the learner's punch gave the teacher a black eye or the bite was forceful enough to break through the skin).

Interfering behavior - is a behavior that interferes with the learner's ability to learn.

Intermittent schedule of reinforcement - a schedule of reinforcement in which only some occurrences of the behavior are reinforced

Interresponse time (IRT) - the time between two consecutive instances of the interfering behavior; determined under baseline conditions

Interval DRL - divides the total amount of time or session into equal intervals of time, and reinforcement is provided after each interval if responding during the interval was equal to or below a criterion limit

Multiple stimulus without replacement preference assessment - An assessment designed to identify individual learner's preferences for various stimuli. An array of items are presented to the learner and the learner is asked to make a choice. After giving the learner some time to engage with his/her choice, the item is taken away and the remaining items are rearranged. The learner is asked to make a choice from the remaining items. Trials are repeated until no items are left.

Operational definition of interfering behavior - The interfering behavior is explicitly or clearly defined. The definition should be clear enough that two independent observers can identify the same behavior when the learner is observed.

Paired stimulus preference assessment - An assessment designed to identify individual learner's preference for various items. Two items are presented to the learner and the learner is asked to make a choice. After giving the learner some time to engage with his/her choice, the item is taken away and two more items are presented to the learner. Trials are repeated until every item has been paired with every other item.

Partial interval recording - recording if the target behavior occurs at any point during a specified interval length

Reinforcement - feedback that increases the use of a strategy or target behavior/skill.

Reinforcer sampling - helps to identify activities and materials that are motivating to learner. Also known as a preference assessment.

Reinforcers - increase the likelihood that the target skill/behavior will be used again in the future.

Schedule of reinforcement - continuous or intermittent patterns in timing for the delivery of reinforcers

Single stimulus preference assessment - An assessment designed to identify individual learner's preference for various items who may not be able to make choices when multiple items are presented at once. A single item is presented to the learner and the responses to the item are recorded such as how long the learner holds the item/response to the item.

Target behavior - the behavior or skill that is the focus of the intervention. Behavior may need to be increased or decreased.

Team members - includes the parents, other primary caregivers, IEP/IFSP team members, teachers, therapists, early intervention providers, and other professionals involved in providing services for the learner on the spectrum.

Topography - the "topography" of behavior is the shape of the behavior (i.e., what does the behavior look like?)

Variable schedule of reinforcement - the interval of time is set to vary across trials for delivering the reinforcer (variable-interval) or the target response is reinforced after an unpredictable number of responses (variable-ratio)

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