AFIRM

Autism Focused Intervention Resources & Modules

R

EBP Brief Packet: Reinforcement

UNC Frank Porter Graham Child Development Institute
Autism Focused Intervention Resources & Modules
Sam, A., & AFIRM Team, Updated 2024

The National Professional Development Center on Autism

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

UNC FRANK PORTER GRAHAM CHILD DEVELOPMENT INSTITUTE

Overview of Content

1. **Table of R Contents:** This list details the specific R resources that apply to Reinforcement.
2. **What is R:** A quick summary of salient features of 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 Reinforcement.
4. **Planning Checklist:** This checklist details the steps for planning for 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 Reinforcement.
6. **Step-by-Step Guide:** Use this guide as an outline for how to plan for, use, and monitor Reinforcement. Each step includes a brief description as a helpful reminder while learning the process.
7. **Implementation Checklist:** Use this checklist to determine if 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 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 Reinforcement and how it is being used with their child.
11. **Additional Resources:** This list provides additional information for learning more about Reinforcement as well as resources.
12. **CEC Standards:** This list details the specific CEC standards that apply to Reinforcement.
13. **Glossary:** This glossary contains key terms that apply specifically to Reinforcement.
14. **References:** This list details the specific references used for developing this R module in numerical order.

Table of Contents

REINFORCEMENT

WHAT IS R?

Reinforcement is a foundational practice often used in combination with other evidence-based practices (such as prompting, visual supports) that applies a consequence following a learner's use of a response or skills that increases the likelihood that the learner will use the response/skills in the future.

EVIDENCE-BASE:

Based upon the 2020 systematic review conducted by the National Clearinghouse on Autism Evidence and Practice (NCAEP), Reinforcement is a foundational intervention that meets evidence-based practice criteria with 104 single case design and 2 group design studies. Reinforcement has been effective for early intervention (0-2), 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 in the 2020 EBP report (Steinbrenner et al., 2020) detail how Reinforcement can be used to effectively address the following outcomes for a target skill/goal/behavior: academic, adaptive/self-help, behavior, communication, joint attention, motor, play, school readiness, social, and vocational.

HOW IS R BEING USED?

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 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), Reinforcement is a focused intervention that meets evidence-based practice criteria with 104 single case design and 2 group design studies. Reinforcement has been effective for early intervention (0-2), 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 in the 2020 EBP report (Steinbrenner et al., 2020) detail how Reinforcement can be used to effectively address the following outcomes for a target skill/goal/behavior: academic, adaptive/self-help, behavior, communication, joint attention, motor, play, school readiness, social, and vocational.

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	Vocational
0-2		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
3-5	Yes	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	Yes	Yes
15-18	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
19-22		Yes		Yes	Yes		Yes		Yes	Yes

EARLY INTERVENTION (0-2 YEARS):

Bui, L. T. D., Moore, D. W., & Anderson, A. (2014). Using escape extinction and reinforcement to increase eating in a young child with autism. *Behaviour Change, 30*(1), 48-55. https://doi.org/10.1017/bec.2013.5

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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)

Reinforcement Procedures

POSITIVE REINFORCEMENT:

Positive reinforcement is the delivery of a reinforcer (primary, such as food, or secondary, such as verbal praise or toys) after the learner uses a target skill or behavior.

- Use **first** when teaching new skills.
- Increases appropriate behaviors. [14]

TOKEN ECONOMY:

A token economy program is a type of positive reinforcement where autistic learners earn tokens which can be used to acquire desired reinforcers (known as backup reinforcers).

- Help autistic learners acquire target skills.
- Tokens do not interrupt activities or lessons.
- Tokens can maintain interest of learner over long periods of time.
- Tokens can be used by multiple learners at once. [14]

NEGATIVE REINFORCEMENT:

Negative reinforcement removes an aversive or unwanted stimulus after the learner uses a target skill or behavior. Remember, negative reinforcement ***is not*** the same as punishment. Negative reinforcement is used to increase target behavior, but punishment decreases a target behavior.

- Used to change interfering behaviors (stereotypical or disruptive behaviors)
- Increases a learner's use of target behavior.[14-15]
- Use after positive reinforcement when positive reinforcement has not effectively increased target behavior or skill.

Data Collection: Time Sampling

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Skill/Goal/Behavior: _____
Directions: Collect data on the frequency of the learner demonstrating the target goal/behavior/skill at time intervals (light green cells) to determine if the learner is making progress.

	Time Intervals (generally every 5 minutes)						
Date						**Total**	**Before, During, OR After R**

ANECDOTAL NOTES:

Data Collection: Event Sampling

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Skill/Goal/Behavior: _____
Directions: Collect data on the frequency of the learner demonstrating a behavior that is interfering with their learning.

Date	Tally (each occurrence of the interfering behavior)	Total Tally

ANECDOTAL NOTES:

Data Collection: Duration

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Goal/Behavior/Skill: _____
Directions: Collect data on the duration of the learner demonstrating the target goal/behavior/skill to determine if the learner is making progress.

Date	Start Time	Stop Time	Total Time (min)	Prompts Needed	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

Prompt Key: VB = Verbal; VS = Visual; G = Gestural; M = Model; P = Physical; I = No prompts needed/Independent

MEASURABLE TARGET GOAL

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Skill/Goal/Behavior: _____
Directions: Use this form to ensure the target behavior is measurable and observable by addressing the when, what, and how.

CREATE A MEASURABLE AND OBSERVABLE GOAL:

1. **WHAT** is the target goal/behavior/skill?

2. **WHEN** and **WHERE** should the target goal/behavior/skill occur?

3. **HOW** will team members/observers know the target goal/behavior/skill has been mastered?

GOAL:

Goal Attainment Scaling

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Skill/Goal/Behavior: _____
Directions: Establish performance criteria for each target skill or behavior to monitor progress. Goal Attainment Scaling (GAS) can be used to help establish these performance criteria as objectives.

Current Level of Performance **Data gathered on:** _____	
Initial Objective	
Secondary Objective	
Expected Level of Outcome **By when:** _____	
Exceeds Outcome	

Types of Reinforcers

WHAT IS A REINFORCER:

A reinforcer is given to the learner after they demonstrate a target/behavior/skill in order to increase the likelihood that the learner will use target skill/behavior again in the future.

MATERIAL/ACTIVITY REINFORCER:

Motivating to learner, but team members should vary these reinforcers with other reinforcers, so learner does not grow tired of them.

- Play activities
- Computer access
- Stickers

NATURAL REINFORCER:

Occur naturally as a result of using the target behavior or skill.

- Receiving a good grade after studying
- Receiving water after signing for more

SENSORY REINFORCER:

Motivating for learner. Only use when 1) adult can control access to reinforcer, 2) the reinforcer is acceptable and appropriate for the setting, and 3) no other reinforcer is as motivating.

- Rocking in rocking chair
- Rubbing hand lotion on hands

SOCIAL REINFORCER:

Found in any setting but might need to be taught to learners if these reinforcers are not inherently reinforcing.

- Facial expressions (smiles)
- Proximity (sitting beside teacher)
- Words and phrases (“Good job!” "Awesome work!”)

TANGIBLE REINFORCER:

Objects that a learner can acquire.

- Toys
- Candy

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:

Reinforcer Sampling for Negative Reinforcement

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

WHAT IS A NEGATIVE REINFORCER:

With negative reinforcement, learning occurs when autistic individuals are motivated to use the target skill or behavior in order to remove or get rid of the aversive stimulus that is serving as the negative reinforcer.

CONDUCT A NEGATIVE REINFORCER SAMPLING FOR ACTIVITIES:

1. Select a variety of daily activities that are demanding for the learner (e.g., washing hands, writing name, remaining seated) and say to the learner, "(Name), time to (activity)."
2. Wait 15 seconds for learner to initiate activity.
3. Repeat instruction if learner does not begin the activity and wait an additional 15 seconds.
4. Allow the learner to leave the activity if s/he makes evasive movements/negative vocalizations or engages in interfering behaviors.

CONDUCT A NEGATIVE REINFORCER SAMPLING FOR ITEMS:

1. Select variety of classroom items (e.g., computer, books, squishy ball) and say to the learner, "Here, (Name)" while handing the object to the learner.
2. Wait 15 seconds for the learner to take the item.
3. Repeat instructions if learner does not take the item and wait an additional 15 seconds.
4. Take the item away if they make evasive movements/negative vocalizations or engages in interfering behaviors.
5. Observe if the behavior decreases when the aversive event is removed.

LIST NEGATIVE REINFORCERS:

PLANNING CHECKLIST

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Skill/Goal/Behavior: _____
Directions: Complete this checklist to determine if this is an appropriate practice to use with the learner on the spectrum as well as if R is ready to be implemented.

PLANNING:

- ❑ Has the target goal/behavior/skill been identified?
- ❑ Has baseline data and/or a functional behavior assessment been collected through direct observation of the learner?
- ❑ Is the target goal/behavior/skill measurable and observable? Does it clearly state **what** the target goal/behavior/skill is, **when** it will occur, and **how** team members/observers will know it has been mastered?
- ❑ Is Reinforcement appropriate for the learner's target goal/behavior/skill?
- ❑ Does the learner have needed prerequisite skills/abilities?
- ❑ Does the learner require additional adaptations/modifications/supports? Such as visual supports or 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 Reinforcement ready and available?

SELECT REINFORCEMENT PROCEDURE:

- ❑ Positive
- ❑ Negative
- ❑ Token Economy

SELECT ADDITIONAL EBPS:

- ❑ Prompting
- ❑ Visual Supports
- ❑ Modeling
- ❑ Other: _____

Positive Reinforcement Steps

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Skill/Goal/Behavior: _____
Directions: Follow these steps to use **Positive Reinforcement** with a learner.

WHAT IS POSITIVE REINFORCEMENT:

Positive reinforcement is the presentation of a reinforcer after a learner uses a target goal/behavior/skill, therefore encouraging the learner to perform that behavior again.

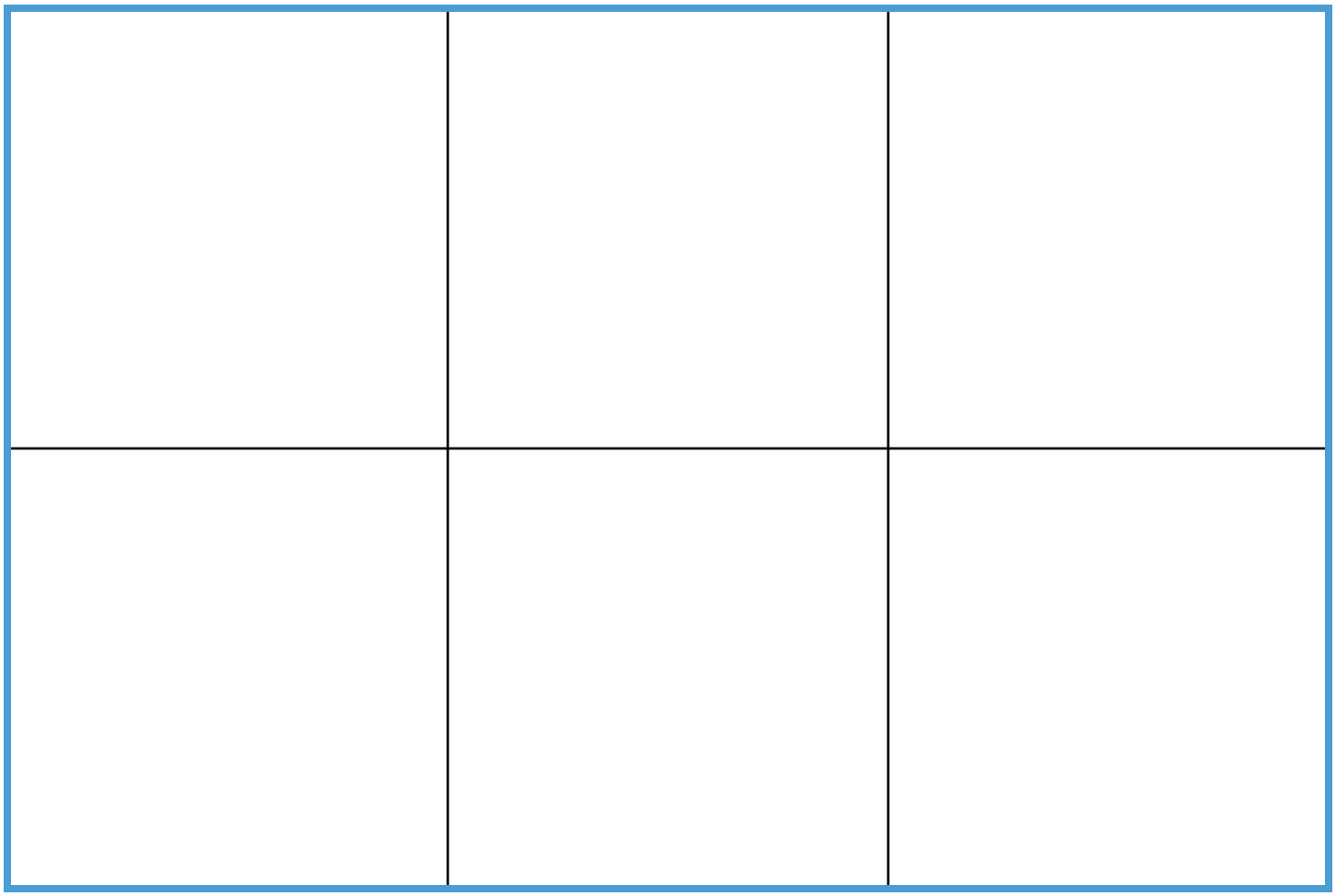
STEPS:

1. **Deliver reinforcement each time the learner uses the target skill or behavior:**
   - Use continuous reinforcement by providing the learner the reinforcement each time the learner uses the target skill or behavior. Continuous reinforcement helps the learner associate the target skill or behavior with the delivered reinforcer.
   - When delivering the reinforcer, be sure to describe the target skill or behavior after the learner has used it correctly. For example, a teacher might say, "You completed your assignment, now you can read your book."
2. **Prevent satiation by varying reinforcers:**
   - Satiation refers to when a selected reinforcer is no longer motivating to a learner. When a reinforcer is used too frequently, it often becomes less effective. Using the menu of reinforcers is one strategy to prevent satiation.
3. **Thin reinforcers and use reinforcers consistently across settings:**
   - Once the learner has met the initial performance criterion for the target skill or behavior, an intermittent reinforcement schedule should be used to thin the use of reinforcers. Team members should decide between two types of intermittent reinforcement schedules:

Intermittent reinforcement schedules:	Ratio Schedule	Interval Schedule
Fixed	Reinforcement is provided after a specified number of correct responses.	Reinforcement is provided after a specified length of time.
Variable	Reinforcement is provided based on an average number of correct responses.	Reinforcement is provided after an average amount of time.

Pictorial Menu

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Skill/Goal/Behavior: _____
Directions: Use this template to create a pictorial reinforcer menu for the learner to select a desired or preferred object, activity, or food BEFORE the learner is set to perform the target goal/behavior/skill. Based upon the individual needs of the learner, the reinforcer menu can include objects, pictures/icons, or words/phrases.



Written Menu

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Skill/Goal/Behavior: _____
Directions: Use this template to create a written reinforcer menu for the learner to select a desired or preferred object, activity, or food BEFORE the learner is set to perform the target goal/behavior/skill. Based upon the individual needs of the learner, the reinforcer menu can include objects, pictures/icons, or words/phrases.

If I _____, I would like:

Token Economy Steps

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Skill/Goal/Behavior: _____
Directions: Follow these steps to use **Token Economy** with a learner.

WHAT IS TOKEN ECONOMY:

Token economy is a type of positive reinforcement where learners earn tokens which can be used to acquire desired reinforcers.

STEPS:

1. **Describe to the learner components of the token economy program:**
   - Explain to the learner the target skill or behavior they will need to perform. Use simple terms or demonstrate the skill or behavior to help the learners understand what is expected of them. Explain to the learner that they will receive a token each time the target skill or behavior is exhibited.
2. **Provide a token to the learner each time the skill or behavior is displayed:**
   - Use continuous schedule by providing the learner a token each time the learner uses the target skill or behavior. Be sure to explain to the learner why they are earning a token. For example, a teacher might say, "You completed your assignment, now you get a token."
3. **Learners select reinforcement from the reinforcement menu:**
   - During the specified time, learners can select a reinforcement from the reinforcer menu if enough tokens were earned. To maintain learner's interest and motivation, adjust prices and rotate items on the reinforcer menu.
4. **Thin tokens and use tokens consistently across settings:**
   - As the learner increases use of the target skill or behavior, gradually thin the use of tokens. Thin tokens by not reinforcing every instance that the target skill or behavior is used. Rather than rewarding the target skill or behavior every time it is used, only reward every other time, then every third time.

Negative Reinforcement Steps

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Skill/Goal/Behavior: _____
Directions: Follow these steps to use **Negative Reinforcement** with a learner. Remember to transition to positive reinforcement.

WHAT NEGATIVE REINFORCEMENT:

Negative reinforcement removes an aversive or unwanted stimulus after the learner uses a target skill or behavior. Remember, negative reinforcement **is not** the same as punishment. Negative reinforcement is used to increase target behavior, but punishment decreases a target behavior. Negative reinforcement should only be used after positive reinforcement has not worked.

STEPS:

1. **Cue the learner to use the target skill or behavior:**
   - While delivering the negative reinforcer, provide the learner with identified instructions to cue the learner to use the target skill or behavior. Use pictorial, written, or verbal instructions to cue the learner to use the target behavior. It is important to NOT remove the negative reinforcer until the learner uses the target skill or behavior.

2. **Remove negative reinforcer when target skill or behavior is used**
   - Once the learner uses the target skill or behavior immediately remove the negative reinforcer.

3. **Transition to positive reinforcement:**
   - Once, the learner begins using the target skill or behavior with negative reinforcers, begin transitioning the learner to positive reinforcement.
   - Positive reinforcement is the presentation of a reinforcer after a learner uses a target goal/behavior/skill, therefore encouraging the learner to perform that behavior again.

Negative Reinforcement: Instruction

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Skill/Goal/Behavior: _____
Directions: While delivering the negative reinforcer, provide the learner with identified instructions to cue the learner to use the target skill or behavior.

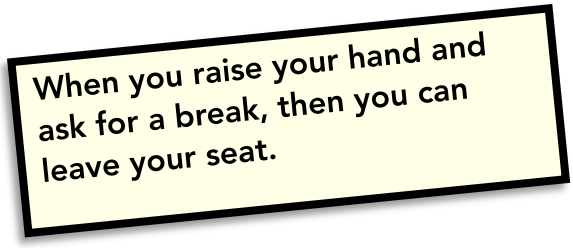
PICTORIAL INSTRUCTION:

Present the learner with a picture depicting the target skill.

- Present the learner a picture of a student raising their hand to ask for a break

WRITTEN INSTRUCTION:

Provide the learner with written instructions to use the target skill or behavior.



VERBAL INSTRUCTION:

Verbally telling the learner what is expected of them.

- 'You have to stay in your seat and raise your hand to ask for a break, then you can take a break.'

MONITORING PROGRESS CHECKLIST

Learner's Name: _____ **Date/Time:** _____
Observer(s): _____
Target Skill/Goal/Behavior: _____
Directions: Complete this checklist to determine if the learner is making progress with using 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 reinforcement used with fidelity?
- ❑ Are there too many reinforcers?
- ❑ Are there too few reinforcers?
- ❑ Are all team members using reinforcement in a consistent manner?
- ❑ Is 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 Reinforcement.

BEFORE YOU BEGIN…

Each of the following points is important to address so that you can be sure 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 Reinforcement, please visit https://afirm.fpg.unc.edu/ .

Keep in mind that the three **Reinforcement** procedures are:

- Positive reinforcement
- Token economy
- Negative reinforcement

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.

STEP 1: PLANNING FOR R

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

1.1 Collect data on target skill

Collect data on observable and measurable target skill or behavior in a variety of settings and activities.

Use **TIME SAMPLING, EVENT SAMPLING**, and/or **DURATION DATA** to collect data on the target skill or behavior in order to determine if the trend is stable to begin using reinforcement.

1.2 Establish performance criteria for program goals

Check to be sure the target skill or behavior clearly describes the context (when), the target skill or behavior to be performed (what), and how the team will know when the skill or behavior is mastered (how).

Establish at least three performance criteria for each target skill or behavior to assist team members in monitoring progress and adjust reinforcement strategies, as necessary.

Use **MEASURABLE TARGET GOAL** to ensure the target behavior is measurable and observable by addressing the when, what, and how.

Use **GOAL ATTAINMENT SCALING** to establish performance criteria for the target goal/behavior/skill.

1.3 Identify reinforcers

The process of identifying reinforcers is different depending on the reinforcement procedure.

- Identifying reinforcers for positive reinforcement and token economy programs
- Select reinforcers that will increase the likelihood that the target behavior or skill will be used again in the future.
- Considerations: age of learner, potential natural reinforcers, and possible suggestions from parents or other team members
- Conduct a reinforcer sampling

  Use **REINFORCER SAMPLING & CHECKLIST** to identify the learner's preferred activities and/or items that can be used as positive reinforcers.

Identifying reinforcers for negative reinforcement

- Identify activities, events, or items that are mildly aversive and could be used as negative reinforcers.

  Use **NEGATIVE REINFORCER SAMPLING** to identify activities and/or items that the learner does not prefer and could be used as negative reinforcers.

1.4 Prepare supporting materials

Different supporting materials will be needed for each reinforcement procedure:

- Positive reinforcement:
  - Create a reinforcer menu for autistic learner to select a desired object, activity, or food.

  Use the **PICTORIAL** or **WRITTEN REINFORCER MENU** template for the learner to select a desired or preferred object, activity, or food BEFORE the learner is set to perform the target goal/behavior/skill.
- Token economy:
  - Identify tokens that are attractive, easy to carry, easy to dispense, and are age and developmentally appropriate for the autistic learner.
  - Set up a system for exchanging tokens that includes "a bank" to keep track of tokens, a time and place for purchasing reinforcers

STEP 2: USING R

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

2.1 Follow steps for respective reinforcement procedure

Positive reinforcement:

- Deliver reinforcement each time autistic learner uses target skill or behavior. Make sure the learner does not have access to the reinforcer until the target skill or behavior is uses. When using an activity, material, or primary reinforcer, also deliver a social reinforcement (praise, teacher attention).
- Prevent satiation by varying reinforcers. Teach the target skill or behavior during several short instructional sessions. Select different reinforcers if satiation occurs.
- Thin reinforcers and use reinforcers consistently across settings. Once the learner has met the initial performance criterion for the target skill or behavior an intermittent reinforcement schedule should be used to fad the use of reinforcers.

Token economy:

- Describe to the learner components of the token economy program. This includes:
  - The target skill or behavior they need to perform
  - Review with the learner how many tokens they need to earn before they can receive an item from the reinforcer menu
- Provide a token to the learner each time the skill or behavior is displayed. Explain to the learner why they are earning a token.
- Learners select reinforcement from the reinforcer menu during a specified time. To maintain learner's interest and motivation, adjust prices and rotate items on the reinforcer menu.
- Thin tokens and use tokens consistently across settings.

Negative reinforcement:

- Cue learners to use target skill or behavior by providing a pictorial, written, or verbal instruction cue to the learner. Do not remove the negative reinforcer until the learner uses the target skill or behavior.
- Remove negative reinforcer when target skill or behavior is used.
- Transition to positive reinforcement. Once, the learner begins using the target skill or behavior with negative reinforcers, begin transitioning the learner to positive reinforcement.

STEP 3: MONITORING R

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

3.1 Collect data on target behavior

Collect data with the same data collection forms used during the planning steps. Using the same data collection forms allow team members to track a learner's use of the target skill/behavior before, during, and after reinforcement is implemented.

Use **TIME SAMPLING**, **EVENT SAMPLING**, and/or **DURATION DATA** to collect data on the target skill or behavior in order to determine if the learner is making progress.

3.2 Adjust reinforcement based on performance criteria

Review collected data with team members and adjust reinforcement based upon if the autistic learner is meeting performance criteria.

3.3 Determine next steps based on learner progress

Collecting data will help team members decide about the effectiveness of using reinforcement and whether the autistic learner 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:

- Have team members received R+ training or is additional training needed?
- Is the target skill or behavior well defined?
- Is the skill or behavior measurable and observable?
- Is the skill or behavior too difficult for the learner?
- Was reinforcement used with fidelity?
- Are there too many reinforcers?
- Are there too few reinforcers?
- Are all team members using reinforcement in a consistent manner?
- Is reinforcement occurring at a sufficient level to maintain the behavior or target skill?

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

Implementation Checklist: Positive Reinforcement

BEFORE YOU START, HAVE YOU…?

- ❑ Identifying the target goal/behavior/skill…?
- ❑ 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	Collect data on target skill or behavior					
1.2	Establish performance criteria for program goals					
1.3	Identify reinforcers					
1.4	Prepare supporting materials					
1.5	Create a reinforcer menu and schedule					
	STEP 2: USING					
2.1	Deliver reinforcement each time learner uses target skill/behavior					
2.2	Prevent satiation by varying reinforcers					
2.3	Thin reinforcers and use reinforcers consistently across settings					
	STEP 3: MONITORING					
3.1	Collect data on target behaviors					
3.2	Adjust reinforcement based on performance criteria					
3.3	Determine next steps based on learner progress					

Implementation Checklist: Token Economy

BEFORE YOU START, HAVE YOU…?

- ❑ Identifying the target goal/behavior/skill…?
- ❑ 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	Collect data on target skill or behavior					
1.2	Establish performance criteria for program goals					
1.3	Identify reinforcers					
1.4	Prepare supporting materials					
1.5	Establish token economy system					
	STEP 2: USING					
2.1	Describe to learners' components of token economy program					
2.2	Provide a token to learner each time skill/behavior is displayed					
2.3	Learners select reinforcement from the reinforcer menu					
2.4	Thin tokens and use tokens consistently across settings					
	STEP 3: MONITORING					
3.1	Collect data on target behaviors					
3.2	Adjust reinforcement based on performance criteria					
3.3	Determine next steps based on learner progress					

Implementation Checklist: Negative Reinforcement

BEFORE YOU START, HAVE YOU…?

- ❑ Identifying the target goal/behavior/skill…?
- ❑ 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).

NOTE: Negative reinforcement removes an aversive or unwanted stimulus after the learner uses a target skill or behavior. Remember, negative reinforcement **is not** the same as punishment. Negative reinforcement is used to increase target behavior, but punishment decreases a target behavior. Negative reinforcement should only be used after positive reinforcement has not worked.

	Observation:	**1**	**2**	**3**	**4**	**5**
	Date:					
	Observer's Initials:					
	STEP 1: PLANNING					
1.1	Collect data on target skill or behavior					
1.2	Establish performance criteria for program goals					
1.3	Identify reinforcers					
1.4	Prepare supporting materials					
1.5	Prepare pictorial, written, or verbal instructions					
	STEP 2: USING					
2.1	Cue learner to use target skill/behavior					
2.2	Remove negative reinforcer when target skill or behavior is used					
2.3	Transition to positive reinforcement					
	STEP 3: MONITORING					
3.1	Collect data on target behaviors					
3.2	Adjust reinforcement based on performance criteria					
3.3	Determine next steps based on learner progress					

Tip Sheet for Professionals

REINFORCEMENT …

- Is a foundational evidence-based practice for children and youth on the spectrum from 0-22 years old that can be implemented in multiple settings.
- Describes the relationship between learner behavior and a consequence that follows the behavior. This relationship is only reinforcing if the consequence increases the likelihood the learner performs the skill or behavior. This practice includes positive reinforcement, negative reinforcement, and token economy programs.

WHY USE WITH LEARNERS ON THE SPECTRUM?

- Reinforcement increases appropriate behavior and on-task behaviors
- Reinforcement can be used to teach replacement behaviors for an interfering behavior.

TIPS:

- Collect data on target skills or behaviors and establish performance criteria
- Identify potential reinforcer through observation, discussion with team members and parents, and feedback from autistic learners
- Prepare supporting materials, such as: reinforcer menus, and pictorial, written, or verbal instructions

INSTRUCTIONAL OUTCOMES:

The evidence-base for 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	Vocational
0-2		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
3-5	Yes	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	Yes	Yes
15-18	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
19-22		Yes		Yes	Yes		Yes		Yes	Yes

STEPS FOR IMPLEMENTING:

1. **PLAN**
   - Collect data on target skill or behavior
   - Establish performance criteria for program goals
   - Identify reinforcers
   - Prepare supporting materials

2. **USE**
   - Follow using steps for specific reinforcement procedure (positive, token economy, or negative; see respective implementation checklist)

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

Reinforcement
R

This sheet was designed as a supplemental resource to provide basic information about 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 R?

- Reinforcement is a foundational evidence-based practice for children and youth on the spectrum from 0-22 years old.
- Reinforcement describes the relationship between behavior and a consequence that follows the behavior that increases the likelihood the skill or behavior is performed again.
- The three reinforcement procedures are positive reinforcement, negative reinforcement, and token economy programs.

WHY USE THIS R WITH MY CHILD?

- Reinforcement is used to teach target skills and increase desired behaviors.
- Research studies have shown that reinforcement has been used effectively with many age groups to achieve outcomes in the following areas: joint attention, communication, social, behavior, adaptive, play, school readiness, motor, academic, cognitive, and vocational.

WHAT ACTIVITIES CAN I DO AT HOME?

- Praise or reinforce appropriate behaviors (such as saying hello, completing chores, following directions)
- Use natural reinforcers whenever possible. For example, if your child signs water, reinforce the use of the sign by providing a glass of water.
- Create a list of favorite activities or objects to share with your child's teachers for possible reinforcers to use at school.

Reinforcement
R

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

To find out more about how this R 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

BOOKS:

Anderson, S. & Jablonski, A. (2007). *Self-help skills for people with autism: A systematic teaching approach.* Bethesda, MD: Woodbine House.

Cohen, M., & Sloan, D. (2007). *Visual supports for people with autism: A guide for parents and professionals.* Bethesda, MD: Woodbine House.

Fouse, B., & Wheeler, M. (1997). *A treasure chest of behavioral strategies for individuals with autism.* Arlington, TX: Future Horizons.

Johnson, E. (2012*). The parent's guide to in-home ABA programs: Frequently asked questions about applied behavior analysis for your child with autism.* London: Jessica Kingsley Publishers.

Keenan, M., Kerr, K., & Dillenburger, K. (1999). *Parents' education as autism therapists: Applied behaviour analysis in context.* London: Jessica Kingsley Publishers.

Matson, J. (2009). *Applied behavior analysis for children with autism spectrum disorders.* New York: Springer.

Reynolds, R. (2011). *ABA: A brief introduction to teaching children with autism.* Publisher: Lulu.com.

Schramm, R. (2011). *Motivation and reinforcement: Turning the tables on autism.* Publisher: Lulu.com.

WEBSITES:

Autism Classroom Resources. (n.d.) Reinforcement in the classroom. http://www.autismclassroomresources.com/reinforcement-in-classroom_19/

Autism Speaks. (2015). Positive reinforcement (PR) ABA therapy, inc. http://www.autismspeaks.org/resource/positive-reinforcement-pr-aba-therapy-inc-6

National Autism Resources. (2015). Autism reinforcers toys for ABA VB and more. http://www.nationalautismresources.com/autism-reinforcers.html

PBIS World. (2015). Reward system. http://www.pbisworld.com/tier-2/reward-system/

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.

6.6 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

Automatic reinforcement - reinforcement that occurs regardless of the social mediation of others (e.g., scratching an itch)

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

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

Consequence - feedback/reinforcement provided by teachers and practitioners.

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

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

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)

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

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

Material reinforcers - Motivating to the learner, but team members should vary these reinforcers with others so learners do not grow tired of them.

Natural reinforcer - occur naturally as a result of using the target behavior or skill.

Negative reinforcement - removes an aversive or unwanted stimulus after the learner uses a target skill or behavior, which increases future use of target skill/behavior.

Performance criteria - allow team members to monitor progress and adjust strategies as the learner gains mastery of the target skill/behavior.

Positive reinforcement - refers to the presentation of a reinforcer after a learner uses a target skill/behavior, therefore encouraging them to perform that behavior again.

Prompt - any help provided that will assist the learner in using specific skills. Prompts can be verbal, gestural, or physical.

Punishment - occurs when a consequence results in a decrease in the future frequency of the behavior that preceded the consequence in similar situations.

Reinforcement (R) - the application of a consequence following a learner's use of a response or skills that increases the likelihood that the learner will use the response/skills in the future.

Reinforcement delay - a separation of time between a learner's response and the delivery of a reinforcer

Reinforcement history - a learner's prior exposure to various schedules or contingencies of reinforcement

Reinforcer menu - a menu of objects, pictures, or text from which a learner can select a reinforcer.

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

Reinforcement schedule - continuous or intermittent patterns in timing for the delivery of reinforcers

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

Satiation - occurs when a selected reinforcer is no longer motivating to a learner.

Sensory reinforcers - Motivating to the learner. Only use when adult can control access to reinforcer, the reinforcer is acceptable and appropriate for the setting, and no other reinforcer is motivating.

Social reinforcer - found in any setting but might need to be taught to learners if these reinforcers are not inherently reinforcing. Examples include facial expressions, words, and phrases ("Good job!").

Tangible reinforcers - objects that the learner can acquire.

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.

Token economy - a type of positive reinforcement where learners earn tokens which can be used to acquire desired reinforcers.

Visual Supports (VS) - a visual display that supports the learner engaging in a desired behavior or skills independent of additional prompts.

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2. Henry, S., & Myles, B. (2007). *The Comprehensive Autism Planning System (CAPS) for individuals with Asperger syndrome, autism, and related disabilities: Integrating best practices throughout the student's day*. Shawnee Mission, Kan.: Autism Asperger Pub.
3. Cicero, F., & Pfadt, A. (2002). Investigation of a reinforcement-based toilet training procedure for children with autism. *Research in Developmental Disabilities, 23,* 319-331. doi: 10.1016/S0891-4222(02)00136-1
4. Grindle, C., & Remington, B. (2005). Teaching children with Autism when reward is delayed. The effects of two kinds of marking stimuli. *Journal of Autism and Developmental Disorders, 35*(6), 839-850. doi:10.1007/s10803-005-0029-2
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