

Reinforcement (R+)

Brief Introduction

Reinforcement (R+) is used to teach new skills and to increase behaviors. Reinforcement establishes the relationship between the learner’s behavior/use of skill and the consequence of that behavior/skill.

Description

Reinforcement (R+) is a term used in operant conditioning that refers to a relationship between a response and a stimulus change. Reinforcement occurs when a stimulus change immediately follows a response, and increases the future frequency of that type of behavior in similar conditions. The stimulus may include a change in the environment, a social interaction with another person (e.g., a greeting, praise), access to a favored item, or many other types of change. The relationship between these two conditions is only reinforcing if the consequence (or stimulus change) increases the likelihood that the learner performs that behavior/skill (response).

Reinforcement can be positive or negative. *Positive reinforcement* is the delivery of a reinforcer (i.e., something that the learner desires which may be tangible, edible, activity-based, interest-based, and so on) after the learner performs the target skill or behavior. Positive reinforcement can also be implemented in the format of a token economy program. Token economy programs systematically give learners access to tokens when targeted behaviors/skills are demonstrated by the learner. These tokens are exchanged for desired objects or activities that reinforce the learners’ use of that behavior/skill. *Negative reinforcement* is the removal of an object or activity that the learner does not want (e.g., taking a break after finishing a set of math problems) when the learner does the identified behavior or skill.

Reinforcement is a foundational evidence-based practice and is almost always used in conjunction with other evidence-based practices (e.g., prompting, pivotal response training, discrete trial teaching, functional communication training).

Reinforcement meets evidence-based criteria with 43 single-case design studies. According to the evidence-based studies, this intervention has been effective for toddlers (0–2 years) to young adults (19–22 years) with ASD.

Reinforcement can be used effectively to address social, communication, behavior, joint attention, play, cognitive, school-readiness, academic, motor, adaptive, and vocational skills.

Brief Adapted from

Kucharczyk, S. (2013). *Reinforcement (R+) fact sheet*. Chapel Hill, NC: The University of North Carolina, Frank Porter Graham Child Development Institute, The National Professional Development Center on Autism Spectrum Disorders.

Neitzel, J. (2009). *Overview of reinforcement*. Chapel Hill, NC: The University of North Carolina, Frank Porter Graham Child Development Institute, The National Professional Development Center on Autism Spectrum Disorders.

Matrix of R+ by Outcome and Age (years)

Social			Communication			Behavior			Joint Attention			Play			Cognitive			School Readiness			Academic			Motor			Adaptive			Vocational			Mental Health		
0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22	0-5	6-14	15-22			

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Research Summary: Reinforcement (R+)

Ages	Skills/intervention goals	Settings	Outcome
1–18	Behavior, social communication	Clinic, home, school	EBP NPDC/NAC

*The information found in the Research Summary table is updated yearly following a literature review of new research and this age range reflects information from this review.

Research

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Steps for Implementation

Step 1. Identifying the Target Skill/Behavior

- A. Define the target skill/behavior in observable and measurable terms.

Step 2. Collecting Baseline Data

- A. Measure the learner's use of the target skill/behavior before implementing reinforcement by collecting one of the following:
 - i. Frequency data
 - ii. Duration data
- B. Collect baseline data for a minimum of four days before implementing reinforcement.
- C. Collect baseline data in numerous settings and/or activities.

Step 3. Establishing Program Goals and Performance Criteria

- A. Establish a program goal for each target skill/behavior that is developmentally and age-appropriate for the learner with ASD.
- B. Establish at least three different performance criteria for each program goal to monitor learner progress.

Step 4. Identifying Positive Reinforcers

- A. Consider the age of the learner with ASD.
- B. Consider the target skill/behavior and natural reinforcers that could be used to teach the skill.
- C. Observe the learner with ASD in natural settings and identify:
 - i. Activities, objects, and foods the learner selects when allowed free choice
 - ii. Phrases and gestures that seem to produce a pleasant response from the learner with ASD
- D. Identify potential reinforcers by asking the learner what he or she would like to work for (if appropriate).
- E. Identify potential reinforcers by interviewing other staff and parents to identify reinforcers that have worked in the past.
- F. Identify potential reinforcers by conducting a reinforcer sampling.
- G. Complete a reinforcer checklist to identify potential reinforcers.

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Step 5. Creating a Reinforcer Menu

- A. Create a menu of possible reinforcers for the learner with ASD, listed by name (if the learner can read) or by picture.
- B. Allow the learner with ASD to select a desired object, activity, or food from the reinforcer menu before or after the activity begins.

Step 6. Selecting a Schedule of Reinforcement

- A. Select continuous reinforcement when a learner with ASD is first learning a target skill/behavior.
- B. Select an intermittent reinforcement schedule when a learner with ASD has met the initial performance criteria for the target skill/behavior (see Step 3).

Step 7. Implementing Continuous Reinforcement

- A. Immediately deliver reinforcement each time the learner with ASD uses the target skill/behavior.
- B. Describe the target skill/behavior after the learner uses it correctly.
- C. Deliver identified reinforcers only when the learner with ASD uses the target skill/behavior.
- D. Provide small amounts of the identified reinforcer after the learner with ASD uses the target skill/behavior.
- E. Pair activity or material reinforcers (e.g., tangible, activity, sensory) with social reinforcement (e.g., praise).
- F. When using primary reinforcers (e.g., food, drink), also deliver a secondary reinforcer (e.g., praise, sticker, computer time).

Step 8. Preventing Satiation

- A. Vary reinforcers for a target skill/behavior or use a different reinforcer for each target skill/behavior.
- B. Teach the target skill/behavior during several short instructional sessions.
- C. Avoid using edible reinforcers. If they must be used, use minimally and offer a variety.
- D. Shift from using primary to secondary reinforcers as soon as possible.
- E. If satiation does occur, start using a different reinforcer.

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Step 9. Monitoring Learner Progress

- A. Use progress monitoring data to determine the learner's mastery of the target skill/behavior.
- B. As learners with ASD meet performance criteria for a target skill/behavior, move from a continuous reinforcement schedule to intermittent schedules of reinforcement.
- C. Use progress monitoring data to adjust reinforcement strategies if the target skill/behavior is not increasing.