



Autism Focused Intervention
Resources & Modules

This overview
brief will
support your
use of the
evidence-
based practice:
Reinforcement

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Reinforcement (R+) ---EBP Brief Packet---

Components of the EBP Brief Packet...

This evidence-based practice overview on Reinforcement (R+) includes the following components:

1. **Overview:** A quick summary of salient features of the practice, including what it is, who it can be used with, what skills it has been used with, and settings for instruction.
2. **Evidence-base:** The *R+ Evidence-base* details the NPDC criteria for inclusion as an evidence-based practice and the specific studies that meet the criteria for this practice.
3. **Step-by-Step Guide:** Use the *R+ Step-by-Step Practice Guide* as an outline for how to plan for, use, and monitor R+. Each step includes a brief description as a helpful reminder while learning the process.
4. **Implementation Checklist:** Use the *R+ Implementation Checklist* to determine if the practice is being implemented as intended.
5. **Data Collection Sheets:** Use the data collection sheets as a method to collect and analyze data to determine if progress is being made for a learner with ASD.
6. **Tip Sheet for Professionals:** Use the *R+ Tip Sheet for Professionals* as a supplemental resource to help provide basic information about the practice to professionals working with the learner with ASD.
7. **Parent Guide:** Use the *R+ Parent Guide* to help parents or family members understand basic information about the practice being used with their child.
8. **Additional Resources:** Use the *Additional Resources* to learn more about the practice.
9. **CEC Standards:** A list of *CEC Standards* that apply specifically to R+.
10. **Module References:** A list of numerical *References* utilized for the R+ module.

Suggested citation:

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What is Reinforcement?

Reinforcement is used to teach target skills and increase desired behaviors. Other evidence-based practices (for example, prompting, pivotal responses training) draw upon components of reinforcement.

Reinforcement describes the relationship between learner behavior and a consequence that follows the behavior. The relationship between the learner's use of a skill/behavior and the consequence is only reinforcing if the consequence *increases* the likelihood the learner performs the skill or behavior.

Evidence-base

Based upon the recent review, reinforcement meets the evidence-based practice criteria set by NPDC with 43 single case design studies. The practice has been effective for early intervention (0-2 years) to high school-age learners (15-22) with ASD. Evidence-based practices (EBP) and studies included in the [2014 EBP report](#) detailed how reinforcement can be used effectively to address: social, communication, behavior, joint attention, play, cognitive, school readiness, academic, motor, adaptive, and vocational outcomes.

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 for Reinforcement---

The National Professional Development Center on ASD has adopted the following criteria to determine if a practice is evidence-based. The EBP Report provides more information about the review process (Wong et al., 2014).

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

- randomized or quasi-experimental design studies (two high quality experimental or quasi-experimental group design studies),
- single-subject design studies (three different investigators or research groups must have conducted five high quality single subject design studies), or
- combination of evidence [one high quality randomized or quasi-experimental group design study and three high quality single subject design studies conducted by at least three different investigators or research groups (across the group and single subject design studies)].

--OVERVIEW--

Reinforcement is a foundational practice used to teach target skills and increase desired behavior. Reinforcement meets the evidence-based practice criteria with 43 single case design studies. The practice has been effective with learners in early intervention (0-2 years) to high school learners (15-22 years). Studies included in the 2014 EBP report detailed how reinforcements can be used effectively to address: communication, joint attention, motor, school readiness, adaptive, behavior, social, cognitive, academic, and vocational outcomes.

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

Early Intervention (0-2)	Preschool (3-5)	Elementary (6-11)	Middle (12-14)	High (15-22)
	Social	Social	Social	Social
Communication	Communication	Communication	Communication	Communication
Joint Attention	Joint Attention			Joint Attention
	Behavior	Behavior	Behavior	Behavior
	School-Readiness	School-Readiness		
	Play	Play		Play
		Cognitive		
	Motor			
	Adaptive	Adaptive	Adaptive	Adaptive
			Vocational	Vocational
		Academic		

Early intervention (0-2 years)

- *Esch, B. E., Carr, J. E., & Grow, L. L. (2009). Evaluation of an enhanced stimulus-stimulus pairing procedure to increase early vocalizations of children with autism. *Journal of Applied Behavior Analysis, 42*(2), 225-241. Doi: 10.1901/jaba.2009.42-225
- Young, J. M., Krantz, P. J., McClannahan, L. E., & Poulson, C. L. (1994). Generalized imitation and response-class formation in children with autism. *Journal of Applied Behavior Analysis, 27*(4), 685-697. doi: 10.1901/jaba.1994.27-685

Preschool (3-5 years)

- *Esch, B. E., Carr, J. E., & Grow, L. L. (2009). Evaluation of an enhanced stimulus-stimulus pairing procedure to increase early vocalizations of children with autism. *Journal of Applied Behavior Analysis, 42*(2), 225-241. Doi: 10.1901/jaba.2009.42-225
- Groskreutz, M. P., Groskreutz, N. C., & Higbee, T. S. (2011). Response competition and stimulus preference in the treatment of automatically reinforced behavior: A comparison. *Journal of Applied Behavior Analysis, 44*(1), 211-215. doi: 10.1901/jaba.2011.44-211
- *Hagopian, L. P., Fisher, W. W., & Legacy, S. M. (1994). Schedule effects of noncontingent reinforcement on attention-maintained destructive behavior in identical quadruplets. *Journal of Applied Behavior Analysis, 27*(2), 317-325. doi: 10.1901/jaba.1994.27-317
- *Higbee, T. S., Carr, J. E., & Patel, M. R. (2002). The effects of interpolated reinforcement on resistance to extinction in children diagnosed with autism: A preliminary investigation. *Research in developmental disabilities, 23*(1), 61-78. doi: 10.1016/S0891-4222(01)00092-0
- Kohler, F. W., Strain, P. S., Maretsky, S., & DeCesare, L. (1990). Promoting positive and supportive interactions between preschoolers: An analysis of group-oriented contingencies. *Journal of Early Intervention, 14*(4), 327-341. doi: 10.1177/105381519001400404
- Koegel, L. K., Camarata, S. M., Valdez-Menchaca, M., & Koegel, R. L. (1997). Setting generalization of question-asking by children with autism. *American Journal on Mental Retardation, 102*(4), 346-357. doi: 10.1352/0895-8017(1998)102<0346:SGOQBC>2.0.CO;2
- LeBlanc, L. A., Carr, J. E., Crossett, S. E., Bennett, C. M., & Detweiler, D. D. (2005). Intensive outpatient behavioral treatment of primary urinary incontinence of children with autism. *Focus on Autism and Other Developmental Disabilities, 20*(2), 98-105. doi: 10.1177/10883576050200020601
- *Lee, R., & Sturmey, P. (2006). The effects of lag schedules and preferred materials on variable responding in students with autism. *Journal of Autism and Developmental Disorders, 36*(3), 421-428. doi: 10.1007/s10803-006-0080-7

Preschool (3-5 years continued)

- *Levin, L., & Carr, E. G. (2001). Food selectivity and problem behavior in children with developmental disabilities analysis and intervention. *Behavior Modification, 25*(3), 443-470. doi: 10.1177/0145445501253004
- Normand, M. P., & Beaulieu, L. (2011). Further evaluation of response-independent delivery of preferred stimuli and child compliance. *Journal of Applied Behavior Analysis, 44*(3), 665-669. doi: 10.1901/jaba.2011.44-665
- *Nuzzolo-Gomez, R., Leonard, M. A., Ortiz, E., Rivera, C. M., & Greer, R. D. (2002). Teaching children with autism to prefer books or toys over stereotypy or passivity. *Journal of Positive Behavior Interventions, 4*(2), 80-87. doi: 10.1177/109830070200400203
- Reichle, J., Johnson, L., Monn, E., & Harris, M. (2010). Task engagement and escape maintained challenging behavior: differential effects of general and explicit cues when implementing a signaled delay in the delivery of reinforcement. *Journal of Autism and Developmental Disorders, 40*(6), 709-720. doi: 10.1007/s10803-010-0946-6
- *Sidener, T. M., Shabani, D. B., Carr, J. E., & Roland, J. P. (2006). An evaluation of strategies to maintain mands at practical levels. *Research in Developmental Disabilities, 27*(6), 632-644. doi: 10.1016/j.ridd.2005.08.002
- Tarbox, R. S., Ghezzi, P. M., & Wilson, G. (2006). The effects of token reinforcement on attending in a young child with autism. *Behavioral Interventions, 21*(3), 155-164. doi: 10.1002/bin.213
- Tsiouri, I., & Greer, R. D. (2007). The role of different social reinforcement contingencies in inducing echoic tacts through motor imitation responding in children with severe language delays. *Journal of Early and Intensive Behavior Intervention, 4*(4), 629-647.
- Volkert, V. M., Vaz, P., Piazza, C. C., Frese, J., & Barnett, L. (2011). Using a flipped spoon to decrease packing in children with feeding disorders. *Journal of Applied Behavior Analysis, 44*(3), 617-621. doi: 10.1901/jaba.2011.44-617

Elementary (6-11 years)

- Athens, E. S., Vollmer, T. R., Sloman, K. N., & Pipkin, C. S. P. (2008). An analysis of vocal stereotypy and therapist fading. *Journal of Applied Behavior Analysis, 41*(2), 291-297. doi: 10.1901/jaba.2008.41-291
- Baltruschat, L., Hasselhorn, M., Tarbox, J., Dixon, D. R., Najdowski, A. C., Mullins, R. D., & Gould, E. R. (2011a). Addressing working memory in children with autism through behavioral intervention. *Research in Autism Spectrum Disorders, 5*(1), 267-276. doi: 10.1016/j.rasd.2010.04.008
- Baltruschat, L., Hasselhorn, M., Tarbox, J., Dixon, D. R., Najdowski, A. C., Mullins, R. D., & Gould, E. R. (2011b). Further analysis of the effects of positive reinforcement on working memory in children with autism. *Research in Autism Spectrum Disorders, 5*(2), 855-863. doi: 10.1016/j.rasd.2010.09.015
- Bartlett, S. M., Rapp, J. T., Krueger, T. K., & Henrickson, M. L. (2011). The use of response cost to treat spitting by a child with autism. *Behavioral Interventions, 26*(1), 76-83. doi: 10.1002/bin.322

Elementary (6-11 years continued)

- Buckley, S. D., & Newchok, D. K. (2006). Analysis and treatment of problem behavior evoked by music. *Journal of Applied Behavior Analysis*, 39(1), 141-144. doi: 10.1901/jaba.2006.120-04
- Charlop-Christy, M. H., & Haymes, L. K. (1998). Using objects of obsession as token reinforcers for children with autism. *Journal of Autism and Developmental Disorders*, 28(3), 189-198. doi: 10.1023/A:1026061220171
- Charlop, M. H., Kurtz, P. F., & Casey, F. G. (1990). Using aberrant behaviors as reinforcers for autistic children. *Journal of Applied Behavior Analysis*, 23(2), 163-181. doi: 10.1901/jaba.1990.23-163
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- Graff, R. B., & Libby, M. E. (1999). A comparison of pre-session and within-session reinforcement choice. *Journal of Applied Behavior Analysis*, 32(2), 161-173. doi: 10.1901/jaba.1999.32-161
- *Hagopian, L. P., Bruzek, J. L., Bowman, L. G., & Jennett, H. K. (2007). Assessment and treatment of problem behavior occasioned by interruption of free-operant behavior. *Journal of Applied Behavior Analysis*, 40(1), 89-103. doi: 10.1901/jaba.2007.63-05
- *Higbee, T. S., Carr, J. E., & Patel, M. R. (2002). The effects of interpolated reinforcement on resistance to extinction in children diagnosed with autism: A preliminary investigation. *Research in developmental disabilities*, 23(1), 61-78. doi: 10.1016/S0891-4222(01)00092-0
- Hoch, H., McComas, J. J., Johnson, L., Faranda, N., & Guenther, S. L. (2002). The effects of magnitude and quality of reinforcement on choice responding during play activities. *Journal of Applied Behavior Analysis*, 35(2), 171-181. doi: 10.1901/jaba.2002.35-171
- Hoch, H., McComas, J. J., Thompson, A. L., & Paone, D. (2002). Concurrent reinforcement schedules: Behavior change and maintenance without extinction. *Journal of Applied Behavior Analysis*, 35(2), 155-169. doi: 10.1901/jaba.2002.35-155
- Kern, L., & Marder, T. J. (1996). A comparison of simultaneous and delayed reinforcement as treatments for food selectivity. *Journal of Applied Behavior Analysis*, 29(2), 243-246. doi: 10.1901/jaba.1996.29-243
- Leung, J. P., & Wu, K. I. (1997). Teaching receptive naming of Chinese characters to children with autism by incorporating echolalia. *Journal of Applied Behavior Analysis*, 30(1), 59-68. doi: 10.1901/jaba.1997.30-59
- *Levin, L., & Carr, E. G. (2001). Food selectivity and problem behavior in children with developmental disabilities analysis and intervention. *Behavior Modification*, 25(3), 443-470. doi: 10.1177/0145445501253004

Elementary (6-11 years continued)

- Machalicek, W., O'Reilly, M., Chan, J. M., Lang, R., Rispoli, M., Davis, T., ... & Didden, R. (2009). Using videoconferencing to conduct functional analysis of challenging behavior and develop classroom behavioral support plans for students with autism. *Education and Training in Developmental Disabilities, 44*(2), 207.
- Milo, J. S., Mace, F. C., & Nevin, J. A. (2010). The effects of constant versus varied reinforcers on preference and resistance to change. *Journal of the experimental analysis of behavior, 93*(3), 385-394. doi: 10.1901/jeab.2010.93-385
- Newman, B. (2005). Self-management of initiations by students diagnosed with autism. *The Analysis of Verbal Behavior, 21*(1), 117.
- *Nuzzolo-Gomez, R., Leonard, M. A., Ortiz, E., Rivera, C. M., & Greer, R. D. (2002). Teaching children with autism to prefer books or toys over stereotypy or passivity. *Journal of Positive Behavior Interventions, 4*(2), 80-87. doi: 10.1177/109830070200400203
- *Sidener, T. M., Shabani, D. B., Carr, J. E., & Roland, J. P. (2006). An evaluation of strategies to maintain mands at practical levels. *Research in Developmental Disabilities, 27*(6), 632-644. doi: 10.1016/j.ridd.2005.08.002
- *Stevens, C., Sidener, T. M., Reeve, S. A., & Sidener, D. W. (2011). Effects of behavior-specific and general praise, on acquisition of tacts in children with pervasive developmental disorders. *Research in Autism Spectrum Disorders, 5*(1), 666-669. doi: 10.1016/j.rasd.2010.08.003

Middle (12-14 years)

- *Graff, R. B., & Larsen, J. (2011). The relation between obtained preference value and reinforcer potency. *Behavioral Interventions, 26*(2), 125-133. doi: 10.1002/bin.325
- *Hagopian, L. P., Bruzek, J. L., Bowman, L. G., & Jennett, H. K. (2007). Assessment and treatment of problem behavior occasioned by interruption of free-operant behavior. *Journal of Applied Behavior Analysis, 40*(1), 89-103. doi: 10.1901/jaba.2007.63-05
- Hagopian, L. P., Farrell, D. A., & Amari, A. (1996). Treating total liquid refusal with backward chaining and fading. *Journal of Applied Behavior Analysis, 29*(4), 573-575. doi: 10.1901/jaba.1996.29-573
- Harchik, A. E., Harchik, A. J., Luce, S. C., & Sherman, J. A. (1990). Teaching autistic and severely handicapped children to recruit praise: Acquisition and generalization. *Research in developmental disabilities, 11*(1), 77-95. doi: 10.1016/0891-4222(90)90006-T
- *Hoch, H., Taylor, B. A., & Rodriguez, A. (2009). Teaching teenagers with autism to answer cell phones and seek assistance when lost. *Behavior Analysis in Practice, 2*(1), 14.

High (15-22 years)

- Falcomata, T. S., Roane, H. S., Hovanetz, A. N., Kettering, T. L., & Keeney, K. M. (2004). An evaluation of response cost in the treatment of inappropriate vocalizations maintained by automatic reinforcement. *Journal of Applied Behavior Analysis, 37*(1), 83-87. doi: 10.1901/jaba.2004.37-83
- *Graff, R. B., & Larsen, J. (2011). The relation between obtained preference value and reinforcer potency. *Behavioral Interventions, 26*(2), 125-133. doi: 10.1002/bin.325
- *Hoch, H., Taylor, B. A., & Rodriguez, A. (2009). Teaching teenagers with autism to answer cell phones and seek assistance when lost. *Behavior Analysis in Practice, 2*(1), 14.
- Kern, L., Carberry, N., & Haidara, C. (1997). Analysis and intervention with two topographies of challenging behavior exhibited by a young woman with autism. *Research in Developmental Disabilities, 18*(4), 275-287. doi: 10.1016/S0891-4222(97)00009-7
- *Lee, R., & Sturmey, P. (2006). The effects of lag schedules and preferred materials on variable responding in students with autism. *Journal of Autism and Developmental Disorders, 36*(3), 421-428. doi: 10.1007/s10803-006-0080-7
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- Piazza, C. C., Hanley, G. P., & Fisher, W. W. (1996). Functional analysis and treatment of cigarette pica. *Journal of Applied Behavior Analysis, 29*(4), 437-450. doi: 10.1901/jaba.1996.29-437
- *Stevens, C., Sidener, T. M., Reeve, S. A., & Sidener, D. W. (2011). Effects of behavior-specific and general praise, on acquisition of tacts in children with pervasive developmental disorders. *Research in Autism Spectrum Disorders, 5*(1), 666-669. doi: 10.1016/j.rasd.2010.08.003
- * Research which included participants in multiple age ranges.



Reinforcement (R+) ---Step-by-Step Guide---

BEFORE YOU START...

Each of the following points is important to address so that you can be sure the selected EBP is likely to address the learning needs of your student.

Have you found out more information about...?

- Identified the behavior...
- Collected baseline data through direct observation...
- Established a goal or outcome that clearly states when the behavior will occur, what the target skill is, and how the team will know when the skill is mastered...

If the answer to any of these is “no,” review the process of how to select an EBP.

This practice guide outlines how to plan for, use, and monitor the reinforcement practice.

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.


Now you are ready to start...

Step 1: R+ Planning

The planning step explains how to establish performance criterion for target skills or behaviors and identify potential reinforcers to use with learners with ASD.

1.1 Collect data on target skill or behavior

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

 *The **Time Sampling Data Collection Sheet**, **Event Sampling Data Collection Sheet**, and **Duration Data Collection Sheet** found in the Resource section will help you 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.

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
- Identifying reinforcers for negative reinforcement
 - Identify activities, events, or items that are mildly aversive 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 learner with ASD to select a desired object, activity or food.
- Token economy:
 - Identify tokens that are attractive, easy to carry, easy to dispense, and are age and developmentally appropriate for the learner with ASD.
 - Set up a system for exchanging tokens that includes “a bank” to keep track of tokens, a time and place for purchasing reinforcers

Step 1: R+ Planning (continued)

1.4 Prepare supporting materials (continued)

- Monetary value of each item
- Negative reinforcement:
 - Prepare pictorial, written, or verbal instructions that are clear, complete, specific, and aimed at the learner's skill and interest level.

Step 2: Using R+

This section describes the process of using reinforcement and includes specific steps for each reinforcement procedure.

Positive reinforcement:

- Deliver reinforcement each time learner with ASD uses target skill or behavior. Make sure the learner does not have access to the reinforcer until the target skill or behavior is used. 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 fade the use of reinforcers.

Token economy:

- Describe to learners with ASD 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+

This step describes the process of collecting data and determining next steps based on the data collected.

3.1 Collect data on target behaviors

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.

3.2 Adjust reinforcement based on performance criteria

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

3.3 Determine next steps based on learner progress

If the learner with ASD is showing progress with reinforcement based upon collected data, then continue to use this practice with the learner. Gradually new target skills and behaviors can be introduced to the learner with ASD.

If the target skill or behavior is not increasing, ask yourself the following questions:

- 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 learner with ASD continues not to show progress, consider selecting a different evidence-based practice to use with the learner with ASD.

Reinforcement (R+)

---Implementation Checklist---

Before you start:

Have you...

- Identified the behavior?
- Collected baseline data through direct observation?
- Established a goal or outcome that clearly states **when** the behavior will occur, **what** the target skill is, and **how** the team will know when the skill is mastered.

If the answer to any of these is "no", refer to the "Selecting EBPs" section on the website.

Observation	1	2	3	4
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:				
<input type="checkbox"/> Positive: create a reinforcer menu and schedule				
<input type="checkbox"/> Token economy: establish token economy system				
<input type="checkbox"/> Negative: prepare pictorial, written, or verbal instructions				
Step 2: Using				
<i>- Positive Reinforcement:</i>				
<input type="checkbox"/> Deliver reinforcement each time learner uses target skill/behavior				
<input type="checkbox"/> Prevent satiation by varying reinforcers				
<input type="checkbox"/> Thin reinforcers and use reinforcers consistently across settings				
<i>- Token Economy:</i>				
<input type="checkbox"/> Describe to learners components of token economy program				
<input type="checkbox"/> Provide a token to learner each time skill/behavior is displayed				
<input type="checkbox"/> Learners select reinforcement from the reinforcer menu				
<input type="checkbox"/> Thin tokens and use tokens consistently across settings				
<i>- Negative Reinforcement:</i>				
<input type="checkbox"/> Cue learner to use target skill/behavior				
<input type="checkbox"/> Remove negative reinforcer when target skill or behavior is used				
<input type="checkbox"/> 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				



Autism Focused Intervention Resources & Modules

---NPDC's Goal Attainment Scaling---

Learner's Name: _____ Date/Time: _____

Observer(s): _____

Directions: Establish performance criteria for each target skill or behavior to monitor progress. NPDC's Goal Attainment Scaling (GAS) can be used to help establish these performance criteria as objectives.

Goal Attainment Scaling:

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

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---Event Sampling Data Collection---

Learner's Name: _____ Date/Time: _____

Observer(s): _____

Target Behavior(s): _____

Event Sampling:

Use event recording to collect the frequency data at every instance the behavior occurs.

Date	Skill/Target Behavior	Total	<i>Before, During, or After</i> reinforcement

Anecdotal Notes:

Date	Observer Initials	Target Skill/Behavior, Comments, and Plans for Next Steps

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---Duration Data Collection---

Learner's Name: _____ Date/Time: _____

Observer(s): _____

Target Behavior(s): _____

Activity/Setting(s): _____

Duration Data:

Use duration data to record how long a learner engages in a particular behavior or skill.

Date	Setting/Activity	Start Time	End Time	Total Minutes	<i>Before, During, or After</i> reinforcement

Anecdotal Notes:

Date	Observer Initials	Target Skill/Behavior, Comments, and Plans for Next Steps

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---R+ Positive Reinforcer Selection---

Learner's Name: _____ Date/Time: _____

Observer(s): _____

Target Skill/Behavior: _____

Positive Reinforcer Selection Checklist

Questions to Consider	List Potential Reinforcers	Age Appropriate?
What natural reinforcers could be used?		
What activities, objects and foods does the learner select independently?		
What phrases or gestures seem to produce a pleasant response from learner with ASD?		
What does the learner say s/he would like to work for? (if appropriate)		
What reinforcers were identified by parents or to her team members as being successful in the past?		
What items did the learner select as part of the reinforcer sampling?		

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---R+ Negative Reinforcer Selection---

Learner's Name: _____ Date/Time: _____

Observer(s): _____

Target Skill/Behavior: _____

Negative Reinforcer Selection Checklist:

Activity/Item	Positive Response (describe)	Negative Response (describe)

**For more
information visit:**
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---R+ Measureable Target Behavior---

Learner's Name: _____ Date/Time: _____

Observer(s): _____

Directions: Make sure your target behavior is measurable and observable by addressing the three elements of *when*, *what* and *how*.

Measureable Target Behavior(s):

When	What	How

**For more
information visit:**
www.afirm.fpg.unc.edu



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---Time Sampling Data Collection---

Learner's Name: _____ Date/Time: _____

Observer(s): _____

Target Behavior(s): _____

Time Sampling:

Use time sampling to monitor the frequency of the target behavior by recording if the learner is engaging in the behavior before, during, or after (reinforcement).

Date	Time					Total	Before, During, or After reinforcement

Anecdotal Notes:

Date	Observer Initials	Target Skill/Behavior, Comments, and Plans for Next Steps

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information visit:**
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Reinforcement (R+) ---Tip Sheet for Professionals---

Reinforcement R+

Reinforcement...

- is an evidence-based practice for children and youth with autism spectrum disorder (ASD) from birth to 22 years old that is implemented in a variety of ways across 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?

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

Outcomes

- The evidence-base for R+ supports the use of this practice to address the outcomes below:

Early Intervention (0-2)	Preschool (3-5)	Elementary (6-11)	Middle (12-14)	High (15-22)
	Social	Social	Social	Social
Communication	Communication	Communication	Communication	Communication
Joint Attention	Joint Attention			Joint Attention
	Behavior	Behavior	Behavior	Behavior
	School-Readiness	School-Readiness		
	Play	Play		Play
		Cognitive		
	Motor			
	Adaptive	Adaptive	Adaptive	Adaptive
			Vocational	Vocational
		Academic		



TIPS:

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



Reinforcement (R+)

---Tip Sheet for Professionals---

Reinforcement R+

This tip sheet was designed as a supplemental resource to help provide basic information about the practice.

For more information visit:
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STEPS FOR IMPLEMENTING

1. Plan

- Collect data on target skill or behavior
- Establish performance criteria for program goals
- Identify reinforcers
- Prepare supporting materials
 - Positive: create a reinforcer menu and schedule
 - Token economy: establish token economy system
 - Negative: prepare pictorial, written, or verbal instructions

2. Use

- Positive reinforcement:
 - Deliver reinforcement each time learner uses target skill/behavior
 - Prevent satiation by varying reinforcers
 - Fade reinforcers and use reinforcers consistently across settings
- Token economy:
 - Describe to learners components of token economy program
 - Provide a token to learner each time skill/behavior is displayed
 - Learners select reinforcement from the reinforcer menu
 - Fade tokens and use tokens consistently across settings
- Negative reinforcement:
 - Cue learner to use target skill/behavior
 - Remove negative reinforcer when target skill or behavior is used
 - Transition to positive reinforcement

3. Monitor

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

Reinforcement (R+)

---Parent's Guide---



This parent introduction to R+ was designed as a supplemental resource to help answer basic questions about this practice.

To find out more about how R+ is used with your child, speak with:

For more information visit:
www.afirm.fpg.unc.edu

This introduction provides basic information about reinforcement.

What is R+?

- R+ is an evidence-based practice for children and youth with autism spectrum disorder (ASD) from birth to 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 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.



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Check out
these
resources to
support your
use of
reinforcement.

**For more
information visit:**
www.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:

Advanced Training Solutions. (2014). Differential reinforcement. Retrieved on December 10, 2015 from: <http://www.autismtrainingsolutions.com/resources/videos/differential-reinforcement>

Autism Classroom Resources. (n.d.) Reinforcement in the classroom. Retrieved on December 10, 2015 from: http://www.autismclassroomresources.com/reinforcement-in-classroom_19/

Autism Speaks. (2015). Positive reinforcement (PR) ABA therapy, inc. Retrieved on December 10, 2015 from: <http://www.autismspeaks.org/resource/positive-reinforcement-pr-aba-therapy-inc-6>

National Autism Resources. (2015). Autism reinforcers toys for ABA VB and more. Retrieved on December 10, 2015 from: <http://www.nationalautismresources.com/autism-reinforcers.html>

PositivelyAutism. (n.d.) Module 6: Reducing problem behaviors: Differential reinforcement. Retrieved on December 10, 2015 from: <http://www.positivelyautism.com/aba/mod6F.html>

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Autism Focused Intervention
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Reinforcement CEC Standards

The CEC Standards that apply to all 27 evidence-based practices can be found on our website at: <http://afirm.fpg.unc.edu/learn-afirm>

Below are CEC Standards that apply specifically to Reinforcement (R+) module.

Standard	Description
Initial Preparation Standard 2: Learning Environments	
ISCI 2 K5	Social skills needed for educational and other environments
ISCI 2 S2	Identify realistic expectations for personal and social behavior in various settings
ISCI 2 S4	Design learning environments that encourage active participation in individual and group activities
ISCI 2 S5	Modify the learning environment to manage behaviors
ISCI 2 S10	Use effective and varied behavior management strategies
DDA2.S3	Use specialized instruction to enhance social participation across environments
Initial Preparation Standard 3: Curricular Content Knowledge	
DDA3 S3	Plan instruction for independent functional life skills and adaptive behavior
Initial Preparation Standard 4: Assessment	
ISCI 4 S5	Interpret information from formal and informal assessments
Initial Preparation Standard 5: Instructional Planning & Strategies	
ISCI 5 S19	Use strategies to support and enhance communication skills of individuals with exceptionalities
DDA5 S15	Use specialized instruction to enhance social participation across environments

Standard	Description
Advanced Preparation Standard 3: Programs, Services, and Outcomes	
SEDAS3 S7	Design and implement instruction that promote effective communication and social skills for individuals with developmental disabilities/autism spectrum disorders
SEDAS3 S8	Provide varied instruction and opportunity to learn play and leisure skills
SEDAS3 S12	Identify evidence based strategies to increase an individual's self-determination of activities, services and preferences

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information visit:**
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---Module References---

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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
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19. Zarcone, J. R., Crosland, K., Fisher, W. W., Worsdell, A. S., & Herman, K. (1999). A brief method for conducting a negative-reinforcement assessment. *Research in Developmental Disabilities, 20*(2), 107-124. doi: 10.1016/S0891-4222(98)00036-5