



Autism Focused Intervention
Resources & Modules

This overview
brief will
support your
use of the
evidence-
based practice:
Time Delay.

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Time Delay (TD) ---EBP Brief Packet---

Components of the EBP Brief Packet...

This evidence-based practice overview on Time Delay (TD) 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 *TD 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 *TD Step-by-Step Practice Guide* as an outline for how to plan for, use, and monitor TD. Each step includes a brief description as a helpful reminder while learning the process.
4. **Implementation Checklist:** Use the *TD 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 *TD 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 *TD 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 TD.
10. **Module References:** A list of numerical *References* utilized for the TD module.

Suggested citation:

Sam, A., & AFIRM Team. (2015). *Time delay*. Chapel Hill, NC: National Professional Development Center on Autism Spectrum Disorder, FPG Child Development Center, University of North Carolina. Retrieved from <http://afirm.fpg.unc.edu/time-delay>

What is Time Delay?

Learners with ASD are at risk for developing prompt dependence. Prompt dependence limits a learner's ability to generalize skills to new situations, activities, and individuals. Adults and team members can prevent prompt dependence by using time delay. Time delay is a response prompting procedure that systematically fades prompts during instructional activities.² Time delay is a foundational practice that is used with other evidence-based practices (prompting and reinforcement). When using time delay, adults provide a controlling prompt (prompt which ensures learner will use the target skill) before learner responds, which reduces errors and increases reinforcement opportunities.³⁻⁶ For more information about prompting and reinforcement, access the prompting module and the reinforcement module.

Evidence-base

Based upon the recent review, time delay meets the evidence-based practice criteria with 12 single case design studies. The practice has been effective with learners in preschool (3-5 years) to high school learners (15-22 years). Evidence-based practices (EBP) and studies included in the 2014 EBP report how time delay can be used effectively to address: social, communication, joint attention, behavior, school readiness, play, cognitive, motor, adaptive, and academic outcomes.

How is TD Being Used?

Time delay can be used by a variety of professionals, including teachers, special educators, therapists, paraprofessionals, and early interventionists in educational and community-based environments. Paraprofessionals in general education classrooms successfully use time delay procedures with a high degree of fidelity during ongoing classroom routines and activities.²⁰ Parents and family members also can use time delay in the home.

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 Autism Focused Intervention
Resources & Modules

---Evidence-base for Time Delay---

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--

Time Delay is a foundational practice used to teach target skills and increase desired behavior. Time Delay meets the evidence-based practice criteria with 12 single case design studies. The practice has been effective with learners in preschool (3-5 years) to high school learners (15-22 years). Studies included in the 2014 EBP report detailed how time delay can be used effectively to address: social, communication, joint attention, behavior, school readiness, play, cognitive, motor, adaptive, and academic 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)
No studies	Social	Social		
	Communication	Communication		Communication
	Joint Attention	Joint Attention		
	Behavior	Behavior		
	School-Readiness	School-Readiness		
	Play	Play		
	Cognitive	Cognitive		
	Motor			
	Adaptive			
	Academic	Academic	Academic	

Early intervention (0-2 years)

No studies

Preschool (3-5 years)

*Ingvarsson, E. T., & Hollobaugh, T. (2010). Acquisition of intraverbal behavior: Teaching children with autism to mand for answers to questions. *Journal of Applied Behavior Analysis, 43*(1), 1-17. doi: 10.1901/jaba.2010.43-1

*Leung, J. P. (1994). Teaching spontaneous requests to children with autism using a time delay procedure with multi-component toys. *Journal of Behavioral Education, 4*(1), 21-31. doi: 10.1007/BF01560506

Reichow, B., & Wolery, M. (2011). Comparison of progressive prompt delay with and without instructive feedback. *Journal of Applied Behavior Analysis, 44*(2), 327-340. doi: 10.1901/jaba.2011.44-327

Rogers, L., Hemmeter, M. L., & Wolery, M. (2010). Using a constant time delay procedure to teach foundational swimming skills to children with autism. *Topics in Early Childhood Special Education, 30*(2), 102-111. doi: 10.1177/0271121410369708

*Taylor, B. A., & Harris, S. L. (1995). Teaching children with autism to seek information-acquisition of novel information and generalization of responding. *Journal of Applied Behavior Analysis, 28*(1), 3-14. doi: 10.1901/jaba.1995.28-3

Venn, M. L., Wolery, M., Werts, M. G., Morris, A., DeCesare, L. D., & Cuffs, M. S. (1993). Embedding instruction in art activities to teach preschoolers with disabilities to imitate their peers. *Early Childhood Research Quarterly, 8*(3), 277-294. doi: 10.1016/S0885-2006(05)80068-7

Elementary (6-11 years)

Ingenmey, R., & Houten, R. (1991). Using time delay to promote spontaneous speech in an autistic child. *Journal of Applied Behavior Analysis, 24*(3), 591-596. doi: 10.1901/jaba.1991.24-591

Ingvarsson, E. T., & Hollobaugh, T. (2010). Acquisition of intraverbal behavior: Teaching children with autism to mand for answers to questions. *Journal of Applied Behavior Analysis, 43*(1), 1-17. doi: 10.1901/jaba.2010.43-1

*Leung, J. P. (1994). Teaching spontaneous requests to children with autism using a time delay procedure with multi-component toys. *Journal of Behavioral Education, 4*(1), 21-31. doi: 10.1007/BF01560506

Leung, J. P., & Chan, O. T. (1993). Teaching spontaneous verbal requests to Chinese children with autism using a time delay procedure. *Bulletin of the Hong Kong Psychological Society*.

Liber, D. B., Frea, W. D., & Symon, J. B. (2008). Using time-delay to improve social play skills with peers for children with autism. *Journal of Autism and Developmental Disorders, 38*(2), 312-323. doi: 10.1007/s10803-007-0395-z

Elementary (6-11 years continued)

Matson, J. L., Sevin, J. A., Fridley, D., & Love, S. R. (1990). Increasing spontaneous language in three autistic children. *Journal of Applied Behavior Analysis, 23*(2), 227-233. doi: 10.1901/jaba.1990.23-227

*Taylor, B. A., & Harris, S. L. (1995). Teaching children with autism to seek information-acquisition of novel information and generalization of responding. *Journal of Applied Behavior Analysis, 28*(1), 3-14. doi: 10.1901/jaba.1995.28-3

Middle (12-14 years)

Collins, B. C., Hager, K. L., & Creech Galloway, C. (2011). Addition of functional content during core content instruction with students with moderate disabilities. *Education and Training in Autism and Developmental Disabilities, 46*(1), 22.

High (15-22 years)

Miller, C., Collins, B. C., & Hemmeter, M. L. (2002). Using a naturalistic time delay procedure to teach nonverbal adolescents with moderate-to-severe mental disabilities to initiate manual signs. *Journal of Developmental and Physical Disabilities, 14*(3), 247-261. doi: 10.1023/A:1016072321661

* Research which included participants in multiple age ranges.



Time Delay (TD) ---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 time delay practice.

Keep in mind that the two time delay procedures are:

- Constant Time Delay
- Progressive Time Delay

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: TD Planning

The planning step explains how to assess learner's current abilities, select key components of time delay, and determine times and activities for using the practice.

1.1 Assess learner's current abilities

Assess the learner's current abilities to determine if the learner has essential prerequisite skills needed for time delay to be successful.

1.2 Select target stimulus and cue

The target stimulus is the event, thing, or situation to which the learner with ASD should respond when a team member is not present or after the target skill/behavior is mastered.

The target cue will signal the learner to perform the skill or behavior.

1.3 Select the controlling prompt

Select the least restrictive prompt needed by the learner to use the target skills successfully as the controlling prompt.

1.4 Select reinforcers

To increase the likelihood that the learner with ASD will use the target skill again in the future, select reinforcers that are appropriate for the individual learner with ASD and the target skill/behavior.

1.5 Identify times and activities for using time delay

Time delay can be used during individual work, small group activities, and embedded within ongoing routines and activities at home or at school.

1.6 Determine time delay procedure

Team members should decide to use constant time delay (implement a fixed delay) or progressive time delay (gradually increase the delay).



*Complete the **Time Delay Planning Worksheet** before using the procedure.*

Step 2: Using TD

This step describes the process of using time delay.

2.1 Establish learner attention and provide cue

Establish learner attention by using an attention getting strategy. Next, the team members presents the cue to begin the teaching activity.

2.2 Deliver the controlling prompt

When beginning to teach a skill using time delay, a fixed 0-second delay is used with both constant time delay and progressive time delay. There is no wait time between the cue and delivering the controlling prompt.

2.3 Increase time delay

With constant time delay, team members implement a fixed delay (usually 3-5 seconds) after using the initial 0-second delay.

With progressive time delay, team members gradually increase the delay between providing the cue and delivering the controlling prompt.

2.4 Respond to learner's attempts

Team members will respond to learner's attempts. If the learner correctly responds, team members offer reinforcement and state what the learner did well. If the response is incorrect or no response is provided, team members provide the controlling prompt.

Step 3: Monitoring TD

The following process describes how the use of time delay can be monitored and how to adjust your plan based on the data.

3.1 Collect data on target behaviors

Track learner's unprompted correct responses, prompted correct responses, unprompted errors, prompted errors, and no errors.

 Use the *Time Delay Data Collection Form* to collect data.

3.2 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 too difficult and needs to be broken down into smaller steps?
- Has enough time been devoted to using this strategy?
- Was time delay used with fidelity based upon the implementation checklist?
- Does the learner have the prerequisite skills and abilities for time delay?
- Are reinforcements used that are motivating to the learner?
- Are team members responding to the learner's attempts appropriately?

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.

Time Delay (TD) ---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 Assess learner's current abilities					
1.2 Select target stimulus and cue					
1.3 Select controlling prompt					
1.4 Select reinforcers					
1.5 Identify times and activities for using time delay					
1.6 Determine time delay procedure					
Step 2: Using					
2.1 Establish learner attention and provide cue					
2.2 Deliver controlling prompt					
2.3 Increase time delay					
2.4 Respond to learner's attempts					
Step 3: Monitoring					
3.1 Collect and analyze data on target behaviors					
3.2 Determine next steps based on learner progress					



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---TD Planning Worksheet---

Learner's Name: _____ Date/Time: _____

Observer(s): _____

Target Behavior: _____

Assess the learner's current abilities:

Ability	Prerequisite	Yes	No
Responding to instructional cues	When a cue or attention-getting strategy is used, is the learner able to look in the appropriate direction (at adult)?		
Wait	Is the learner able to wait for approximately four seconds for a prompt if s/he is not certain of the correct response?		
Imitate others	Is the learner able to imitate others when a model is provided?		
Stay seated	Is the learner able to stay at an activity for 5 to 10 minutes?		
Reinforcement	Does the learner have a history of using behaviors more frequently after appropriate reinforcers have been provided?		
Follow one-step instructions	Is the learner able to follow simple, one-step instructions?		

If the answer to any of these questions is 'no', time delay might not be an appropriate evidence-based practice to use with this learner. Refer to the online module for more information or select a new practice.

Anecdotal Notes:

Observe the learner in daily routines and activities to help answer the questions above.

Time	Activity	Behavior

Describe the target skill: _____

Select cue:

What is the **cue** that will signal the learner to perform the target skill? _____

Is this cue:

- Material or environmental manipulation
- Task direction
- Naturally occurring event

Identify the Controlling Prompt:

Try out different prompts to see which ones are successful in getting the learner with ASD to complete the task consistently.

Prompt Type	Prompt Description	Level of Success
Gestural		
Verbal		
Visual		
Model		
Physical		

Controlling prompt selected: _____

Select Reinforcers:

Select **reinforcers** that will increase the learner’s use of target skill or behavior in the future. ____

Identify Times and Activities for Using Time Delay:

Consider the target skill or behavior and determine the best time to use time delay.

Activity	Possible Opportunities
Individual Work	
Small Group Activities	
Embedded instruction within Ongoing Routines and Activities	

How many trials will be implemented during instructional activities: _____ trials

Determine Time Delay Procedures:

Select the time delay procedure the team will use with the learner.

- Constant time delay (implement a fixed delay after using the 0-second delay over a predetermined number of trials)
- Progressive time delay (gradually increase the delay after using the 0-second delay over a predetermined number of trials)

Consider learner characteristics and task characteristics to determine the length of the response interval.

_____ = Response Interval

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---Data Collection---

Learner's Name: _____ Date/Time: _____

Observer(s): _____

Target Behavior(s): _____

Data Collection:

Use this form when collecting data on time delay procedures. Remember to collect data on skills/behavior completed correctly with prompts and without prompts.

Target Skill:					
Controlling Prompt:					
Date:		Delay:		Date:	
Trial #	Before Prompt	After Prompt	Trial #	Before Prompt	After Prompt
1			1		
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		
9			9		
10			10		

+ = performed correct; - = performed incorrectly; 0=no response

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Time Delay (TD) ---Tip Sheet for Professionals---

Time Delay TD

Time delay...

- is a foundational evidence-based practice for children and youth with autism spectrum disorder (ASD) from 3 to 22 years old that is implemented in a variety of ways across multiple settings.
- is implemented by an adult providing a controlling prompt before learner responds which reduces errors and increases reinforcement opportunities.



Why Use?

- Time delay reduces prompt dependence.
- Time is user-friendly and cost efficient, because it does not require any additional materials other than those that are needed for the selected instructional activity.

Outcomes

- The evidence-base for TD 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)
No studies	Social	Social		
	Communication	Communication		Communication
	Joint Attention	Joint Attention		
	Behavior	Behavior		
	School-Readiness	School-Readiness		
	Play	Play		
	Cognitive	Cognitive		
	Motor			
	Adaptive			
	Academic	Academic	Academic	

TIPS:

- Assess the learner prior to using time delay to be sure the learner has the prerequisite skills needed for the practice.
- Select a controlling prompt that is the least restrictive prompt needed by the learner to use the target skill successfully.
- Respond to learner's attempts based upon if the attempt was correct or incorrect.



Time Delay (TD) ---Tip Sheet for Professionals---

Time Delay TD

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

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STEPS FOR IMPLEMENTING

1. Plan

- Assess learner's current abilities
- Select target stimulus and cue
- Select controlling prompt
- Select reinforcers
- Identify times and activities for using time delay
- Determine time delay procedure

2. Use

- Establish learner attention and provide cue
- Deliver controlling prompt
- Increase time delay
- Respond to learner's attempts

3. Monitor

- Collect data on target behaviors
- Determine next steps based on learner progress

Time Delay (TD) ---Parent's Guide---



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

To find out more about how TD 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 TD?

- Time delay is an evidence-based practice for children and youth with autism spectrum disorder (ASD) from 3 to 22 years old.
- Time delay includes a set of procedures that fades prompts as learners gain new skills.
- The two time delay procedures are constant time delay (CTD) and progressive time delay (PTD).

Why use TD with my child?

- Time delay assists learners with transferring target skills and behaviors to new situations.
- Research studies have shown that time delay has been used effectively with many age groups to achieve outcomes in the following areas: social, communication, joint attention, behavior, school readiness, play, cognitive, motor, adaptive, and academic outcomes.

What activities can I do at home?

- When your child struggles with an activity at home (brushing teeth, eating with a spoon, greeting family members, cleaning up room), make sure your child is successful by immediately helping your child complete the activity. Provide the level of help needed for your child to be successful.
- Gradually allow your child the opportunity to try activity on his/her own before providing help.
- When your child completes a difficult task, be sure to provide encouragement and/or a reward.



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Check out
these
resources to
support your
use of time
delay.

**For more
information visit:**
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---Additional Resources---

Articles:

Knight, V. F., Spooner, F., Browder, D. M., Smith, B. R., & Wood, C. L. (2013). Using systematic instruction and graphic organizers to teach science concepts to students with autism spectrum disorders and intellectual disability. *Focus on Autism and Other Developmental Disabilities, 28*(2), 115-126. doi:10.1177/1088357612475301

Ledford, J. R., & Wehby, J. H. (2015). Teaching children with autism in small groups with students who are at-risk for academic problems: Effects on academic and social behaviors. *Journal of Autism and Developmental Disorders, 45*(6), 1624-1635. doi:10.1007/s10803-014-2317-1

Sutherland, D., Didden, H. C. M., Stevens, M., Achmadi, D., O'Reilly, M. F., Carnett, A., . . . Roch, L. (2015). An iPad-based intervention for teaching picture and word matching to a student with ASD and severe communication impairment. *Journal of Developmental and Physical Disabilities, 27*(1), 67-78. doi:10.1007/s10882-014-9401-5

Swain, R., Lane, J. D., & Gast, D. L. (2014) Comparison of constant time delay and simultaneous prompting procedures: Teaching functional sight words to students with intellectual disabilities and autism spectrum disorder. *Journal of Behavioral Education, 24*, 2210-224. doi: 10.1007/s10864-014-9209-5

Websites:

The Center on Secondary Education for Students with Autism Spectrum Disorders. (n.d.). *Evidence-based Practice (EBP) High School Case Study: Time Delay*. Retrieved August 17, 2015, from <http://csesa.fpg.unc.edu/high-school-case-studies>



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Time Delay 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 Time Delay (TD) 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

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

---Module References---

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2. McCormick, L. (2006a). Planning evaluation/monitoring. In M. J. Noonan & L. McCormick (Eds.), *Young children with disabilities in natural environments* (pp. 99-118). Baltimore, MD: Paul H. Brookes Pub. Co.
3. Alberto, P. A., & Troutman, A. C. (1999). *Applied behavior analysis for teachers* (5th ed). Upper Saddle River, NJ: Prentice-Hall.
4. Hughes, T. A., & Fredrick, L. D. (2006). Teaching vocabulary with students with learning disabilities using classwide peer tutoring and constant time delay. *Journal of Behavioral Education, 15*(1), 1-23. doi: 10.1007/s10864-005-9003-5
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