

Extinction

This is an alternate version of the characteristics overview chart on the next page. It is provided for accessibility.

Verbal skills

- Nonverbal
- Mixed
- Verbal

Grade Level

- PK
- Elementary
- Middle/High


Cognitive Level

- Classic

Areas Addressed

- Adaptive Behavior/Daily Living
- Behavior
- Communication/Speech
- Social/Emotional

Extinction

	Verbal Skills	Grade Levels	Cognitive Level	Areas Addressed
	<input checked="" type="checkbox"/> Nonverbal	<input checked="" type="checkbox"/> PK	<input checked="" type="checkbox"/> Classic	<input type="checkbox"/> (Pre)Academic/ Cognitive/Academic
	<input checked="" type="checkbox"/> Mixed	<input checked="" type="checkbox"/> Elementary	<input type="checkbox"/> High Functioning	<input checked="" type="checkbox"/> Adaptive Behavior/ Daily Living
	<input checked="" type="checkbox"/> Verbal	<input checked="" type="checkbox"/> Middle/High		<input checked="" type="checkbox"/> Behavior
				<input checked="" type="checkbox"/> Communication/Speech
				<input checked="" type="checkbox"/> Social/Emotional



Brief Introduction

Extinction refers to an applied behavior analysis (ABA) procedure whereby formerly reinforced behavior is no longer reinforced. Extinction can occur when teachers withhold identified reinforcers for a target behavior that was previously reinforced.



Description

According to Miller (2006), extinction occurs when an event that follows a behavior is systematically stopped and the rate of the behavior decreases. In other words, extinction involves withholding or terminating the consequence of previously reinforced behavior to weaken an undesired behavior. Extinction has been used to decrease the occurrence of a variety of problem behaviors.

Extinction procedures may take different forms. The first form of extinction procedure is related to positive reinforcement (Cooper, Heron, & Heward, 2007). For example, a child with autism (AU) drops his pencil in order to get attention from the teacher. If the teacher picks up the pencil and smiles at the child, he may be reinforcing the behavior and the behavior is likely to increase. If the teacher ignores the behavior, the child will eventually stop dropping his pencil.

When behaviors are maintained by negative reinforcement, the form of extinction procedure is different. For example, Mike spit on his worksheet when he did not want to do his work. When this happened, Ms. Smith would send him to a thinking chair as a punishment. However, for Mike, sitting in the thinking chair was an opportunity to avoid completing the worksheet. Ms. Smith realized that his problem behavior was designed to escape the task. When, instead, Ms. Smith ignored his negative behavior (extinction) and rein-

forced him for completing problems on his assignment, Mike's spitting behavior was gradually decreased.

During the extinction process, extinction bursts may occur. An extinction burst is a temporary increase in the frequency, intensity, or duration of the undesired behavior as soon as extinction begins. It is critical that the teacher truly continue the extinction process that has been developed. Otherwise, the undesired behavior may remain at the increased level of intensity.



Steps

Teachers can use extinction procedures as follows:

1. *Identify the relationship between reinforcer and the reinforced behavior.* Problem behaviors can be reinforced by negative reinforcement, positive reinforcement, or automatic reinforcement. It is important to differentiate reinforcers for the problem behavior.
2. *Discontinue the previously provided reinforcers.* After identifying reinforcers, teachers need to analyze the function of reinforcers. By removing the reinforcers or by preventing a removal of aversive stimuli, teachers can disconnect the relationship between reinforcers and problem behaviors so that the target behavior can be reduced.
3. *Monitor the rate of problem behavior.* The child's problem behavior must be observed and the progress of the extinction procedure must be monitored. It is important to know that all members involved in the procedure share and follow the rules. Once the child connects the relationship between his behavior and reinforcers, it takes even longer to disconnect the reestablished connection.



Brief Example

Mr. Reid, a second-grade teacher, had difficulty dealing with Logan's interrupting behavior during class. Logan asked several irrelevant questions while Mr. Reid was lecturing. Mr. Reid realized that he answered Logan whenever he asked questions in class, and through a functional behavior assessment found that Logan's interrupting behavior was to obtain the teacher's attention.

Mr. Reid began to ignore Logan's irrelevant questions and reinforced appropriate questions. After one week, Logan's interrupting behavior gradually decreased. Finally, Logan stopped asking irrelevant questions while Mr. Reid was lecturing.



Summary

Extinction is a procedure in which reinforcement for a previously reinforced behavior is discontinued. The extinction procedure itself is not an approach to prevent the occurrence of a problem behavior. Basically, the environment is changed through the extinction procedure so that the rate of problem behavior is decreased.



Research Table

# of Studies	Ages (years)	Sample Size	Area(s) Addressed	Outcome
7	2-15	38	Social consequence, sleep problems, aggressive behaviors, problem behavior; self-injurious behavior; disruptive behavior; finger picking, appropriate vocal responses, inappropriate verbalizations	+



Studies Cited in the Research Table

- Smaby, K., MacDonald, R.P.F., Ahearn, W. H., & Dube, W.V. (2007). Assessment protocol for identifying preferred social consequences. *Behavioral Interventions*, 22, 311-318.
Three children with AU aged 4 to 7 participated. The study described a method for rapidly identifying social reinforcers and assessing relative preference among social consequences for young children with AU. Participants' free-operant behavior was analyzed in three social consequence conditions that alternated with an extinction condition. The results identified social consequences that functioned as reinforcers and others to which the child was relatively indifferent.
- Schreck, K.A. (2001). Behavioral treatments for sleep problems in autism: Empirically supported or just universally accepted? *Behavioral Interventions*, 16, 265-278.
The study investigated the effectiveness of applied behavior analysis for treating sleep problems in children with AU through a computer search of the relevant literature. Six articles were found, collectively comprising 27 children with AU, aged 2-12. The articles revealed four basic themes of behavioral techniques for treating sleep disorders in children with AU: bedtime routines, extinction, stimulus fading, and faded bedtimes. Results showed that of the ABA methods, only research on extinction provided sufficient evidence for a possibly efficacious intervention for sleep problems in children with AU.
- Braithwaite, K. L., & Richdale, A. L. (2000). Functional communication training to replace challenging behaviors across two behavioral outcomes. *Behavioral Interventions*, 15, 21-36.
The study examined the effectiveness of an intervention that included extinction and functional communication training to reduce multiply controlled, self-injurious, and aggressive behaviors in a 7-year-old boy with AU in a school setting. Analysis of behavioral antecedents and consequences suggested that self-injury and aggression served the dual behavioral outcomes of escape from difficult tasks and access to preferred objects. Treatment consisted of teaching the boy an alternate request while challenging behaviors were concurrently placed on extinction. Results showed that challenging behaviors with different behavioral outcomes can be replaced with functionally equivalent communication.

4. Hagopian, L. P., Crockett, J. L., van Stone, M., DeLeon, I. G., & Bowman, L. G. (2000). Effects of noncontingent reinforcement on problem behavior and stimulus engagement: The role of satiation, extinction, and alternative reinforcement. *Journal of Applied Behavior Analysis*, 33, 443-448.
Four children aged 4 to 13 participated in a study that examined the effects of noncontingent reinforcement with and without extinction on problem behavior and stimulus engagement. Results showed that noncontingent reinforcement without extinction can be effective in reducing problem behavior if the alternative sources of free reinforcement are adequately dense.
5. Mace, A.B.M., Shapiro, E. S., & Mace, F. C. (1998). Effects of warning stimuli for reinforcer withdrawal and task onset on self-injury. *Journal of Applied Behavior Analysis*, 31, 679-682.
A 7-year-old girl with AU participated in the study, which investigated the effects of warning stimuli for reinforcer withdrawal and task onset on self-injury. Results of a functional analysis of self-injurious behavior showed that the child's behavior was maintained by access to preferred objects and escape or avoidance of task demands. Extinction and noncontingent reinforcement treatments were supplemented by presenting a statement combined with a picture cue at 30-second intervals, indicating that a preferred object would be removed or a task would be presented. Results showed that warning stimuli in combination with extinction and noncontingent reinforcement reduced self-injurious behavior to acceptable levels. The frequency of self-injurious behaviors remained comparatively high in a control condition consisting of a 2-minute delay to onset of reinforcer removal or task demands.
6. Freeman, K.A., & Piazza, C. C. (1998). Combining stimulus fading, reinforcement, and extinction to treat food refusal. *Journal of Applied Behavior Analysis*, 31, 691-694.
The study combined fading, reinforcement, and escape extinction using guided compliance to increase food consumption while maintaining low rates of disruptive behavior at mealtime for a 6-year-old girl with AU. Results indicated that intake increased and compliance with prompting procedures remained relatively stable despite the requirement that food consumption increase.
7. Hardman, M.A. (1979). Reduction of inappropriate verbalizations in an emotionally disturbed adolescent. *Mental Retardation*, 17, 251-252.
A 15-year-old female with AU participated in the study, which compared the effectiveness of timeout vs. extinction with regard to speech dysfluency. Results supported the efficacy and practicality of the timeout procedure in that control was markedly improved over extinction; besides, it was obtained rapidly.



References

- Braithwaite, K. L., & Richdale, A. L. (2000). Functional communication training to replace challenging behaviors across two behavioral outcomes. *Behavioral Interventions*, 15, 21-36.
- Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis* (2nd ed.). Upper Saddle River, NJ: Pearson Education, Inc.
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- Hagopian, L. P., Crockett, J. L., van Stone, M., DeLeon, I. G., & Bowman, L. G. (2000). Effects of noncontingent reinforcement on problem behavior and stimulus engagement: The role of satiation, extinction, and alternative reinforcement. *Journal of Applied Behavior Analysis*, 33, 443-448.
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- Mace, A. B. M., Shapiro, E. S., & Mace, F. C. (1998). Effects of warning stimuli for reinforcer withdrawal and task onset on self-injury. *Journal of Applied Behavior Analysis*, 31, 679-682.
- Miller, L. K. (2006). *Principles of everyday behavior analysis* (4th ed.). Belmont, CA: Thomson Wadsworth.
- Schreck, K.A. (2001). Behavioral treatments for sleep problems in autism: Empirically supported or just universally accepted? *Behavioral Interventions*, 16, 265-278.
- Smaby, K., MacDonald, R.P.F., Ahearn, W. H., & Dube, W.V. (2007). Assessment protocol for identifying preferred social consequences. *Behavioral Interventions*, 22, 311-318.



Resources and Materials

- Children's Intervention Learning and Development: www.childmdim.com/resources/intervention/aba_approach.asp
This link takes the user to a page that defines and gives an example of using extinction; contains resources for parents and educators.
- Teaching Children with Autism: www.polyxo.com/discretetrial/difficultbehaviors.html
Here the user will find a succinct summary of extinction as well as other ABA strategies.