# **Overview of Extinction**

Sullivan, L., & Bogin, J. (2010). *Overview of extinction.* Sacramento: CA. National Professional Development Center on Autism Spectrum Disorders, M.I.N.D. Institute. University of California at Davis Medical School.

Extinction is a strategy based on applied behavior analysis that is used to reduce or eliminate unwanted behavior. Extinction involves withdrawing or terminating the positive reinforcer that maintains an inappropriate interfering behavior. This withdrawal results in the stopping or extinction of behavior. The interfering behavior is likely to increase in frequency and intensity (extinction burst) before it is extinguished as the learner seeks to elicit the reinforcers previously provided. Extinction is often used with differential reinforcement to increase appropriate behaviors while discouraging the use of inappropriate behaviors.

#### **Evidence**

Extinction procedures meet the criteria for an evidence-based practice with four single subject and one group design studies. The evidence supports the use of extinction procedures with preschool, elementary, and middle school ages.

### With what ages is extinction effective?

Extinction can be used effectively with children and youth in early childhood, elementary, and middle school settings.

## What skills or intervention goals can be addressed by extinction?

Extinction procedures are most commonly used to reduce challenging or interfering behaviors. Within the articles that comprise the evidence base, extinction has been used to successfully reduce interfering behaviors (disruptive or restricted behaviors that interfere with optimal development, learning, and/or achievement).

### In what settings can extinction be effectively used?

Extinction procedures should only be used after other more positive interventions have been tried and shown not to work. Extinction procedures should only be used by an individual who is familiar with the learner and who can create a plan for dealing with an extinction burst should the behaviors get worse.

#### **Evidence Base**

The studies cited in this section document that this practice meets the NPDC on ASD's criteria for an evidence-based practice. This list is not exhaustive; other quality studies may exist that were not included.

Extinction: Overview Page 1 of 4

National Professional Development Center on ASD

10/2010

#### Preschool

Kuhn, S. C., Lerman, D. C., Vorndran, C. M., & Addison, L. (2006). Analysis of factors that affect responding in a two-response chain in children with developmental disabilities. *Journal of Applied Behavior Analysis* 39(3), 263-280.

### Elementary and Middle School

- Aiken, J. M., & Salzberg, C. L. (1984). The effects of a sensory extinction procedure on stereotypic sounds of two autistic children. *Journal of Autism and Developmental Disorders*, *14*(3), 291-299.
- Hagopian, L. P., Contrucci-Kuhn, S. A., Long, E. S., Rush, K. S. (2005). Schedule thinning following communication training: Using competing stimuli to enhance tolerance to decrements in reinforcer density. *Journal of Applied Behavior Analysis*, 38(2), 177-193.
- Maag, J. W., Wolchik, S. A., Rutherford, R. B., & Parks, B. T. (1986). Respnse covariation on self-stimulatory behaviors during sensory extinction procedures. *zJournal of Autism and Developmental Disorders*, *16*(2), 119-132.
- Rincover, A. (1978). Sensory Extinction: A procedure for eliminating self-stimulatory behavior in developmentally disabled children. *Journal of Abnormal Child Psychology, 6*(3), 299-310.

#### Selected Additional References

- Braithwaite, K. L., & Richdale, A. L. (2000). Functional communication training to replace challenging behaviors across two behavioral outcomes. *Behavioral Interventions*, *15*, 21-36.
- Bregman, J. D., & Gerdtz, J. (1997). Behavioral interventions. In D. J. Cohen & F. R. Volkmar (Eds.) *Handbook of autism and pervasive developmental disorders (2<sup>nd</sup> Edition)*. New York: John Wiley & Sons, Inc., 897-924.
- DeLeon, I. G., Neidert, P. L., Anders, B. M., & Rodriquez-Catter, V. (2001). Choices between positive and negative reinforcement during treatment for escape-maintained behavior. *Journal of Applied Behavior Analysis*, *34*, 521-525.
- Hanley, G. P., Piazza, C. C., Fisher, W. W., & Maglieri, K. A. (2005). On the effectiveness of and preference for punishment and extinction components of function based interventions. *Journal of Applied Behavioral Analysis*, *38*(1), 51-65.
- Horner, R. H., Carr, E. G., Strain, P. S., Todd, A. W., & Reed, H. K. (2002). Problem behavior interventions for young children with autism: A research synthesis. *Journal of Autism and Developmental Disorders*, *32*(5), 423-446.

Extinction: Overview National Professional Development Center on ASD 10/2010

- Iwata, B. A., Pace, G. M., Cowdery, G. E., & Miltenberger, R. G. (1994). What makes extinction work: An analysis of procedural form and function. *Journal of Applied of Behavior Analysis*, *27*(1), 131-144.
- Kahng, S., Iwata, B. A., & Lewin, A. B.(2002). Behavioral treatment of self-injury, 1964 to 2000. American Journal of Mental Retardation, 107(3), 212-221.
- Kelley, M. E., Lerman, D. C., & Van Camp, C. M. (2002). The effects of competing reinforcement schedules on the acquisition of functional communication. *Journal of Applied Behavior Analysis*, *35*, 59-63.
- 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.
- Matson, J. L., & Santino, L. V. (2008). A review of behavioral treatments for self-injurious behaviors of persons with autism spectrum disorders. *Behavior Modification*, *32*(1), 61-76.
- Neidert, P. L., Iwata, B. A., & Dozier, C. L. (2005). Treatment of multiply controlled problem behavior with procedural variations of differential reinforcement. *Exceptionality*, *13*(1), 45-53.
- O'Neill, R. E., & Sweetland-Baker, M. (2001). Brief report: An assessment of stimulus generalization and contingency effects in functional communication training with two students with autism. *Journal of Autism and Developmental Disorders*, 31(2), 235-240.
- O'Reilly, M., Edrisinha, C., Sigafoos, J., Lancioni, G., Cannella, H., Machalicek, W., & Langthorne, P. (2007). Manipulating the evocative and abative effects of an establishing operation: Influences on challenging behavior during classroom instruction. *Behavioral Interventions*, 22(2), 137-145.
- Ricciardi, J. N., & Luiselli, J. K. (2003). Behavioral intervention to eliminate socially mediated urinary incontinence in a child with autism. *Child and Family Behavior Therapy*, *25*(4), 53-63.
- Samaby, K., MacDonald., R. P. E., Ahearn, W. H., & Dube, W. V. (2007). Assessment protocol for identifying preferred social consequences. *Behavior Intervention*, *22*, 311-318.
- 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.
- Thompson, R. H., Iwata, B. A., Hanley, G. P., Dozier, C. L., & Samaha, A. L. (2003). The effects of extinction, noncontingent reinforcement and differential reinforcement of other behavior as control procedures. *Journal of Applied Behavior Analysis*, *36*, 221-238.

Extinction: Overview
National Professional Development Center on ASD 10/2010

Weiskop, S., Matthews, J., Richdale, A. (2001). Treatment of sleep problems in a 5-year old boy with autism using behavioral principles. *National Autistic Society, 5*(2), 209-221.

Extinction: Overview National Professional Development Center on ASD

10/2010