Available online at www.sciencedirect.com

ScienceDirect

Behavior Therapy 47 (2016) 733–746

Behavior Therapy

www.elsevier.com/locate/bt

In Pursuit of Generalization: An Updated Review

Anna J. Swan
Matthew M. Carper
Philip C. Kendall
Temple University

Stokes and Osnes (1989) outlined three principles to facilitate the generalization and maintenance of therapeutic gains. Use of functional contingencies, training diversely, and incorporating functional mediators were recommended. Our review, with most illustrations from studies of youth, updates Stokes and Osnes's original paper with a focus on evidence-based strategies to increase generalization of therapeutic gains across settings, stimuli, and time. Research since 1989 indicates that training for generalization by increasing the frequency of naturally occurring reinforcers for positive behaviors, and altering maladaptive contingencies that inadvertently reinforce problem behaviors, are associated with favorable treatment outcomes. Training diversely by practicing therapy skills across contexts and in response to varying stimuli is also implicated in clinical outcomes for internalizing, externalizing, and neurodevelopmental disorders. Preliminary research recommends the use of internal (e.g., emotion identification) and external (e.g., coping cards) functional mediators to prompt effective coping in session and at home. Strategies for increasing generalization, including the use of technology, are examined and future research directions are identified.

Keywords: generalization; maintenance; treatment outcome

A PRIMARY TASK OF therapy is creating a supportive environment in which the client can practice new, increasingly adaptive ways of processing and reacting to internal and external stressors. Generalization then refers to the client's ability to apply in-session cognitive, affective, behavioral, and interpersonal gains to daily life. Success in generalizing gains allows clients to address behaviors that negatively impact interpersonal, occupational, and academic functioning, enhancing treatment outcomes. For this paper, the term "behavior" comprises both overt actions as well as actions that can be displayed covertly or overtly, such as emotional states, thought patterns, and physiological functions. Increasing our understanding of factors that best facilitate generalization represents an important area of research that cuts across presenting problems and therapeutic approaches.

Stokes and Osnes (1989) defined generalization as the occurrence of behavior change in settings and across stimuli different from the training environment. After a behavior is trained or modified using principles such as reinforcement and punishment, generalization refers to the occurrence of the trained behavior in a new environment or in response to a new stimulus. To best facilitate generalization of behavior change, researchers and clinicians must first ask what kinds of training and interventions best promote the generalization of gains. Second, to develop and implement increasingly effective training programs, researchers and clinicians must assess factors contributing to generalization. Given the importance to mental health treatment providers of generalizing therapeutic gains, and the quarter century that has passed since Stokes and Osnes's 1989 review, the current review aims to update the literature regarding generalization. Specifically, we focus on factors contributing to the generalization of therapeutic gains (a) across settings, (b) across stimuli, and (c) the maintenance of gains over time.

In their 1989 paper, Stokes and Osnes proposed three guiding principles to facilitate generalization

Address correspondence to Philip C. Kendall, Ph.D., or Anna J. Swan, M.A., Department of Psychology, Temple University, 1701 N. 13th Street, Philadelphia, PA 19122. e-mail: anna.josephine.swan@temple.edu.

across the developmental spectrum, and across disorders. First they proposed exploiting functional contingencies by working with the client and the client's support network to create an environment that reinforces adaptive behaviors, and ignores or punishes maladaptive behaviors. Second, they proposed training diversely by providing the client with varied opportunities to learn and practice therapeutic skills both inside the therapy session and at home. Third, they proposed the use of functional mediators (e.g., reminders of concepts or skills learned in-session) to prompt the client to apply gains made in therapy to new situations. The current paper updates and expands upon the three guiding principles proposed by Stokes and Osnes given recent advances in knowledge about how cognitive, behavioral, and interpersonal factors contribute to the generalization and maintenance of therapy gains. An exhaustive review was beyond the scope of this paper; thus, the review provides illustrative examples of evidence-based practices to promote generalization across the developmental spectrum, and for an array of presenting concerns, including anxiety, depression, autism spectrum, attention-deficit/hyperactivity, and disruptive behavior disorders.

"If You Got It, Flaunt It": Exploit Functional Contingencies

Functional contingencies refer to the relationships among antecedents, behaviors, and consequences that increase or decrease the magnitude and frequency of target behaviors (Stokes & Osnes, 1989). Functional analysis was broadly defined by Skinner (1953) to be the examination of cause-and-effect relationships between the environment and behaviors. *Function* refers to the purpose that a behavior serves for an individual, and *functional analysis* involves examining the antecedents and consequences that prompt, reinforce, and maintain behavior. Functional analysis is a methodology often used to assess for social-positive reinforcement (e.g., increased attention), social-negative reinforcement (e.g., escape or avoidance of an undesired situation), and automatic reinforcement (e.g., behavior that is inherently reinforcing) that serves to increase the frequency of the problem behavior (Hanley, Iwata, & McCord, 2003). Interventions then focus on altering antecedents and consequences to decrease maladaptive behavior and increase the "positive opposite"—a desired target behavior that replaces the problem behavior (Kazdin, 2010). Functional analysis methodology has primarily been used to identify environmental contingencies that maintain disruptive behaviors (e.g., tantrums, noncompliance, and aggression; Hanley et al., 2003). For example, a child who engages in self-injurious, head-banging behavior during homework time may be reinforced by increased parental attention, escape of homework completion, and/or increased stimulation. Intervention then seeks to alter contingencies to reinforce on-task behavior, and ignore or punish self-injurious behavior.

The principles of functional analysis are also used to assess contingencies implicated in the development and maintenance of internalizing symptomatology. For example, an anxious youth who refuses school may be reinforced by increased parental attention to school refusal behavior, as well as escape and avoidance of anxiety-provoking school situations. To exploit functional contingencies that increase desired behaviors (approach) and decrease maladaptive behaviors (avoidance), assessment of functional contingencies as they naturally occur in the client's daily life is paramount. Clinicians and clients can then collaborate to (a) increase opportunities for naturally occurring consequences that reinforce desired behavior, and (b) alter contingencies that inadvertently reinforce problem behavior.

NATURAL CONSEQUENCES

Stokes and Osnes (1989) noted that interfering behaviors persist when individuals do not execute adaptive behaviors with sufficient skill or frequency to encounter naturally occurring reinforcers. For example, an individual with social anxiety disorder (SAD) may (a) avoid social contact with unfamiliar peers and (b) be less skillful in social interactions; thus, although social interactions are highly reinforcing for many, an individual with SAD may lack sufficient opportunities and/or social skills to find novel social situations reinforcing. However, with repeated exposure to anxiety-provoking situations and the development of social skills through graded practice, an individual with SAD will come to find previously feared situations inherently pleasurable, thus reinforcing and facilitating generalization of social approach behaviors across settings, people, and time. Indeed, research examining social impairment in anxious youth indicates that youth with SAD are rated as less socially competent by parents (Scharfstein, Alfano, Beidel, & Wong, 2011) and teachers (Bernstein, Bernat, Davis, & Layne, 2008). Increased social anxiety symptoms have also been linked to peer victimization (Cohen & Kendall, 2015). Due to social skills deficits and problematic peer relations, youth with SAD may experience social interactions and relationships as punishing (i.e., distressing and associated with negative outcomes like peer victimization) rather than reinforcing. Additionally, youth with SAD often avoid anxiety-provoking social situations,