Reinstatement of Responding

Another kind of response recovery, called reinstatement, involves the recovery of behavior when the reinforcer is presented alone after a period of extinction (Bouton, 2004; Bouton & Swartzentruber, 1991). In an operant model of reinstatement, Baker, Steinwald, and Bouton (1991) established responding for food reinforcement and then extinguished the lever-pressing response by withholding food. After extinction, reinstatement involved response-independent delivery of food without the response levers (using retractable levers), followed by tests with the response levers available. On these tests, animals that were given response-independent food deliveries showed more reinstatement of lever pressing than control animals. The findings from three experiments ruled out superstitious reinforcement and discriminative after-effects of food as the basis of reinstatement. Instead, the results indicated that response-independent reinforcement activates contextual S's from the original learning situation that set the occasion for previously reinforced behavior (lever pressing).

At the practical level, reinstatement is often observed in the treatment of drug addiction. After becoming a drug addict (acquisition), the addict may seek help for his addiction, and treatment may involve drug withdrawal (extinction) in a therapeutic setting. When the client is returned to his former neighborhood and drug culture (original setting), drugs may be available on a response-independent basis, handed out on street corners to get him hooked or freely available from his friends. Free hits of drugs would activate the original setting events that have set the occasion for obtaining and using drugs in the past, reinstating drug use.

A similar analysis can be applied to the problem of obesity. In this case, the operant is selection and consumption of palatable high-calorie foods (acquisition). Dieting and choice of low-calorie alternatives may be analyzed as an extinction procedure for eating high-calorie foods (extinction). Response reinstatement occurs when palatable snacks and foods are freely available in the cupboard or refrigerator, following the dieting. Or perhaps you have your friends over and prepare rich desserts that are freely available after the guests have gone home. Response-independent presentation of palatable foods would re-establish control by setting events (S's) that have regulated selection and eating of high-calorie foods. The obese person may have to throw out all the high-fat/sugar foods and avoid getting together with friends. Even these drastic measures may not work.

Unfortunately, it is impossible to eliminate all of the setting events that control eating of high-calorie foods. The best solution is to learn new ways of acting in the original setting—for example, when offered a piece of pie, ask for blueberries. Requests for calorie-wise food must be maintained initially by social reinforcement (“good choice” from friends and family) until the long-term consequences of weight loss and health can have an effect.

Extinction and Forgetting

During extinction, operant behavior decreases over time. People often talk about the weakening of behavior as loss of memory or forgetting. An important question concerns the procedural differences between forgetting and extinction. Extinction is a procedure in which a previously reinforced response no longer produces reinforcement. The opportunity to emit the operant remains available during extinction. Thus, the pigeon may still peck the illuminated key, or the rat may continue to press the response lever. In contrast, forgetting is said to occur after the mere passage of time. An organism that has learned a response is tested for retention after some amount of time has passed. In this case, there is no apparent opportunity to emit the behavior.

Skinner (1938) designed an experiment to assess the behavioral loss that occurs after the passage of time. In this experiment, four rats were trained to press a lever, and each animal received