

SKINNER BOX

In behavioral studies, researchers study the relationship between environmental events and measures of a target behavior, termed a *respondent* (in classical conditioning) or *free operant* (in operant conditioning). In the 1930s, as B. F. Skinner was developing the laws of operant conditioning, he constructed an apparatus, technically called an *operant chamber* but popularly known as a “Skinner box,” that deprives an animal of all external stimuli other than those under the control of the experimenter (Skinner 1935). Generally, a Skinner box is soundproof and light-resistant, and usually contains a bar or lever to be pressed by the animal to either gain a reward or avoid a painful stimulus. An operant chamber allows the researcher to experimentally manipulate environmental stimuli and measure their impact on operant behavior. Additionally, the use of the chamber allows data on the animal’s responses to be monitored and collected electromechanically twenty-four hours a day, seven days a week, thus eliminating the need for an external observer to record behavior.

Employed for more than seventy years in basic operant research, the operant chamber recently has been used to study topics such as how previous conditioning influences the acquisition of new responses under delayed and immediate reinforcement (Snyckerski, Laraway, Huitema, and Poling 2004); discrimination training (Nevin, Davison, and Shahan 2005); how drugs affect responding (Pinkston and Branch 2004); concurrent schedules (Sealey, Sumpter, Temple, and Foster 2005); and sophisticated data analysis techniques (e.g., Li and Huston 2002).

Although there have been organized contests to train a rat to complete a series of complex activities using live animals and an operant chamber (Banister-Marx 1996), maintaining an animal laboratory with operant chambers is expensive, and often beyond the resources of those not engaged in ongoing research programs. As a result, researchers have developed software such as “Sniffy the Virtual Rat” (Alloway, Willson, and Graham 2005) to simulate how schedules of reinforcement and extinction effect responding. Another software simulation program allows students to learn to modify a bird’s behavior (Hay 2004). Nick Yee suggests that role-playing games such as “EverQuest” have all the elements of a virtual Skinner box (2001a, 2001b).

The Skinner box is sometimes confused with the baby tender, a device Skinner developed to provide one of his infant daughters with a comfortable, protective environment in which to sleep (Skinner 1945). The rumor that Skinner left his infant daughter in the device for such long periods of time that she was traumatized and later committed suicide in her twenties is completely untrue—in fact, Deborah Skinner Buzan wrote an article in 2004

about the myth (Buzan 2004). Nevertheless, the story has continued to circulate and is included in an historical account of major events in psychology (Slater 2004).

SEE ALSO *Behaviorism; Classical Conditioning; Operant Conditioning; Pavlov, Ivan; Reinforcement Theories; Skinner, B. F.*

BIBLIOGRAPHY

- Alloway, Tom, Greg Wilson, Jeff Graham, Lester Krames. 2000. *Sniffy the Virtual Rat: Pro Version 2.0*. Belmont, CA: Thomson Wadsworth.
- Banister-Marx, John. 1996. The Annual Skinner Box Rat Training Competition. The National Health Museum. http://www.accessexcellence.org/AE/AEC/AEF/1996/banister-marx_rat.html.
- Buzan, Deborah Skinner. 2004. I Was Not a Lab Rat. *Guardian*, March 12.
- Hay, John. 2004. Operant Conditioning: Programmable. University of Maryland University College, PsycLab Online. <http://pantherfile.uwm.edu/johnchay/PL06/OC/OC.html>.
- Li, Jay-Shake, and Joseph Huston. 2002. Nonlinear Dynamics of Operant Behavior: A New Approach Via the Extended Return Map. *Reviews of the Neurosciences* 13 (1): 31–57.
- Nevin, John A., Michael Davison, and Timothy A. Shahan. 2005. A Theory of Attending and Reinforcement in Conditional Discriminations. *Journal of the Experimental Analysis of Behavior* 84: 281–303.
- Pinkston, Jonathan W., and Marc N. Branch. 2004. Repeated Post- or Pre-session Cocaine Administration: Roles of Dose and Fixed-Ratio Schedule. *Journal of Experimental Analysis of Behavior* 81: 169–188.
- Sealey, Diane M., Catherine E. Sumpter, W. Temple, and T. Mary Foster. 2005. Concurrent Second-Order Schedules: Some Effects of Variations in Response Number and Duration. *Journal of the Experimental Analysis of Behavior* 84: 19–35.
- Skinner, B. F. 1935. Two Types of Conditioned Reflex and a Pseudo Type. *Journal of General Psychology* 12: 66–77.
- Skinner, B. F. 1945. Baby in a Box. *Ladies' Home Journal* (October): 30–31, 135–136, 138.
- Slater, Lauren. 2004. *Opening Skinner's Box: Great Psychological Experiments of the Twentieth Century*. New York: Norton.
- Snyckerski, Susan, Sean Laraway, Bradley E. Huitema, and Alan Poling. 2004. The Effects of Behavioral History on Response Acquisition with Immediate and Delayed Reinforcement. *Journal of Experimental Analysis of Behavior* 81 (1): 51–64.
- Yee, Nick. 2001a. The Norrathian Scrolls. <http://www.nickjee.com/eqt/home.html>.
- Yee, Nick. 2001b. The Virtual Skinner Box. <http://www.nickjee.com/eqt/skinner.html>.

William G. Huitt
John H. Hummel