

Behavior Principles

Schedules of Reinforcement: Fixed- versus Variable-Interval Schedules

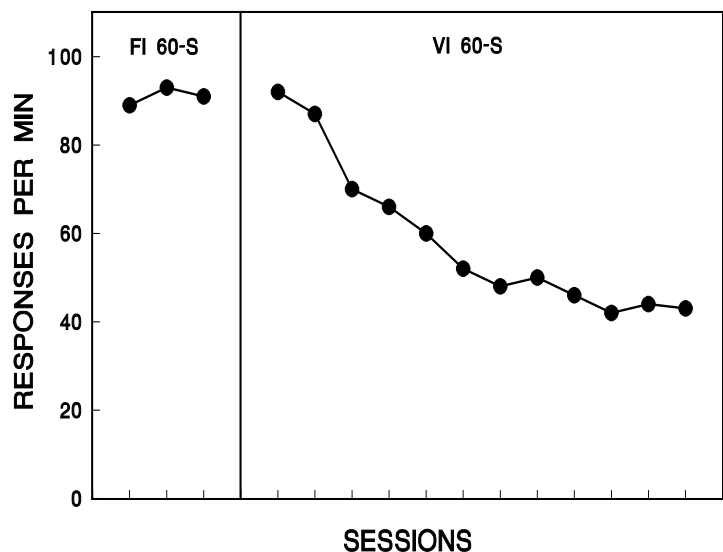
By studying the effects of schedules of reinforcement, behavior analysts have learned much about how the probability of a response at any given moment depends on the details of the response-reinforcer relation. As it turns out, each type of schedule generates a characteristic pattern of behavior.

You have already studied the pattern of behavior generated by fixed-interval (FI) schedules: You maintained your rat's responding on an FI 60-s schedule until the responding approximated a steady-state. The next laboratory project involves **variable-interval (VI)** schedules. Like FI schedules, VI schedules reinforce the first response after some interval has elapsed. Unlike FI schedules, the programmed intervals in VI schedules differ from one reinforcer to the next. Another way of putting it: FI schedules program a constant **interreinforcer interval (IRI)**, whereas VI schedules program variable IRIs. Note that VI schedules usually are described in terms of the mean IRI. For example, on a VI 30-s schedule the mean of the intervals is 30 s, even though the individual intervals may differ considerably from one another.

Our experimental goal is to compare behavior on FI and VI schedules that arrange, on average, equal IRIs. In the first laboratory project you exposed your rat to an FI 60-s schedule; therefore, in this phase you will expose the rat to a VI 60-s schedule.

You will be recording several measures of your rat's behavior. Some should already be familiar: cumulative records, daily response rates, and the pause that precedes responding within each interval. Another important measure has to do with the time between successive responses. This measure is known as the **interresponse time (IRT)**. Of particular interest is the IRT immediately preceding the delivery of a reinforcer - the **reinforced IRT**. This measure provides information about the rate of responding at the point of reinforcement. You will learn more about this IRT, and IRTs in general, over the course of this project.

You should maintain three daily graphs based on the data from the VI 60-s schedule. Update these graphs every day, *before* you leave the lab. (Thus, when you leave the lab, the graphs should be current, showing all the sessions run to date.) In Figure 1, the y-axis should show the mean overall response rate (in responses per min). Figure 2 should show the mean pause (in s). Figure 3 should show the mean reinforced IRT (also in s). In all three graphs, the x-axis should represent sessions. Use filled circles for the data points, and connect them with a solid line. Eventually, you will be using the graphs to compare these variables - overall response rate, mean pause, and mean reinforced IRT - across the FI and VI schedules. Thus, your graphs should begin with results from the last three sessions on the FI schedule, laid out as shown here. (Note that the data points are connected *within* a schedule condition, but there is a break in the line when the conditions change from FI to VI). At present you do not yet have information



on the reinforced IRTs in the FI condition, so leave space in Figure 3 so you can add this information later.