

# Sniffy report



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The amounts of bar presses for the different training schedules were compared. It was found that non-target behaviors were frequent during the first observation session, but as an association with bar pressing was formed, an increase in target behavior was observed. The IVR schedule produced more target behaviors, and when the reinforce was removed, target behavior decreased. The CRY rat appeared to learn the target behavior more quickly, and the target behavior became extinct more gradually. However, when the reward (virtual pellet) was taken away or decreased, the rats' target behavior decreased.

Comparison of CRY and IVR After Shaping 3 Method Participants The sample included fifteen students who shaped virtual rats named " Sniffs. " These students were in a Psychology 310 class at Clemson University. The class was made up of juniors and seniors in college. Two virtual rats were observed in this experiment using the " Sniffs" program. These rats were considered to be representative of the population because they were programmed to behave the way a " normal," " average" rat would. Materials or Apparatus A virtual Skinner Box was used in this procedure. In this box, there was a bar for the rat to press and a food dispenser ending at a hopper. Virtual pellets of food were also used in this experiment. Procedure This procedure was conducted in a laboratory setting as an observational study. The experiment consisted of two rats and was between-subject. Observations began with the fifteen students simply observing a virtual rat and recording behaviors that they could possibly study. These behaviors were: sniffing, walking, circling, cleaning, crouching, lying flat, and standing on hind legs. However, the definitions of these behaviors were arbitrary.

Three behaviors (bar pressing, rearing, and grooming) were then operationally defined and became the focus of the virtual rats' behaviors. Bar pressing was operationally defined to be when Sniffs pressed the bar that would give him a virtual pellet. Rearing was operationally defined as Sniffs standing on his hind legs against a wall, but not his standing on his hind legs in the middle of the cage. Grooming was operationally defined as Sniffs cleaning his face with his front paws, but not any other type of cleaning behavior. One of the virtual rats Comparison exhibition of these three behaviors was taken from the fifteen students.

This was done to define a baseline for "normal" behavior in these virtual rats. Upon devising this baseline, the students shaped "Sniffs" for 45 minutes on a continuous reinforcement schedule. The object of training the virtual rat was to teach him how to press the bar and, thus, receive a food pellet. To train him, the students pressed the bar every time Sniffs got close to the food hopper. This caused familiarity with the sound of a bar press, a connection of the sound and the food pellet, and eventually, the connection of the bar press and the food pellet.

Thus, Sniffs was trained to press the bar to get food. Because of time constraints, no one in either group completely trained the virtual rats, but for ease of understanding, fully trained rats were used after this part of the procedure. This experiment was done with simulated hungry rats. The students then split up into groups of seven and eight to observe two different virtual rats. The group of seven observed a rat trained on a continuous reinforcement (CR) schedule, and the group of eight observed a rat trained on a variable ratio-5 (VR) schedule.

The groups observed the virtual rats at different times, but each group observed for 30 minutes. The group observing the rat on a CRY schedule observed and recorded the number of bar presses their Sniffs displayed. The group observing the rat on a IVR schedule recorded the number of bar presses, rearing, and grooming behaviors exhibited by Sniffs. After the virtual rats were trained and observed, the students attempted to extinguish the behavior they trained Sniffs to perform. Both virtual rats were considered to be fully shaped at the beginning of this section of the study.

The settings were changed on the Sniffs program so that there was no sound when the bar was pressed. The rats also did not receive any food pellets when they pressed the bar. The rats were observed for ten minutes each at different times. Bar pressing, rearing, Comparison of CRY and IVR After Shaping 5 and grooming behaviors were recorded. Again, because of time constraints, neither rat became completely extinct in the ten minutes of observation, but completely extinct rats were used for the next section of the experiment. Extinction was defined as less than one bar press per minute for the rats.

After behaviors for both rats were extinguished, they were placed on their previous schedules of reinforcement to measure recovery behavior. The rats were observed for twelve minutes in attempt to retrain them to press the bar for food. Once more, because of time constraints, the virtual rats were set back to full association of bar pressing with food for the remainder of the experiment. Finally, punishment took place. A fully trained CRY virtual rat and a fully trained IVR virtual rat were used in this section. High punishment was implemented for every time the rats pressed the bar.

This punishment was a shock from the floor of the Skinner Box. Both rats received this treatment. Each of the rats was observed for five minutes. Bar reusing, rearing, and grooming behaviors were recorded during this time. It is believed that the rat may have thought it was still in extinction, and it is possible that the rat never actually gained the habit back. There were several confound that could have affected the results of this experiment. The lab assistant kept time by incorrect recording of data could have resulted from human error.

At times, the virtual rats pressed the bar many times sequentially, making it difficult to accurately record the data. In this study, the independent variable was the level of reinforcement the rats got when they pressed the bar; these levels were: no enforcement, CRY, IVR, and positive punishment. No reinforcement was used during baseline observations. CRY and IVR were used in training the rats to press the bar and again in recovery. Positive punishment was used in attempt to extinguish the learned behavior of bar pressing in the rats.

The dependent variable was the virtual rats' pressing of the bar, Comparison of CRY and IVR After Shaping 6 and data was collected. It is arguable that rearing and grooming behaviors were additional dependent variables, but the one being studied and compared was the bar pressing behavior. There were no ethical problems in this procedure. Virtual rats were used, so no live animals were in danger. These were the only participants in the experiment. The experimenters were also not in danger. The only possible issue would bestress.

The experimenters had a slight amount of stress on them to keep up with the bar presses of these rats. Other than this minor possible dilemma, the experiment was ethically sound. There was no compensation offered in this procedure, and very little bias was likely to play a role in the collection of data. Results Frequency behavior was observed and recorded during this experiment. The IVR rat's training included 118 bar presses for 45 minutes. A noticeable difference was found in the frequency of bar presses for the rat trained on a CRY schedule and the rat trained on a IVR schedule.

Figure 1 shows the differences in baseline, CRY, and IVR rat observations of behaviors. Figure 2 gives a comparison of the extinction of the CRY and IVR trained rats. In the twelve minutes the students observed the IVR rat after extinction, no recovery was made. A slight recovery was made in the CRY rat. In the recovery after punishment, the IVR rat pressed the bar four times and did not receive a pellet. The data for all of the observations made can be found in Figure 3. Over all, the differing training techniques appeared to have affects on the response of virtual rats to the independent variable.

#### Comparison of CRY and IVR After Shaping 7 Discussion Hypothesis 1

Hypothesis 1 focused on the observation section of the experiment to define a baseline. It was predicted that more non-target behaviors (rearing and grooming) would occur more often than the target behavior (bar pressing). As seen in Figure 1, the hypothesis was supported. The baseline included almost no bar presses and larger amounts of rearing and grooming.

Hypothesis 2 Hypothesis 2 suggested that during shaping, there would be an increase in target behavior and a decrease in non-target behavior as an association was formed.

This hypothesis was supported for the rat trained on a IVR schedule, but was not recorded for the rat trained on a CRY. These figures are recorded in Figure 1 . The fact that non-target behaviors were not recorded for the CRY rat Hypothesis 3 Hypothesis 3 stated that the rat trained on the IVR schedule would result in more bar presses per minute than the rat trained on the CRY scale. Again, Figure 1 shows this hypothesis to be true. There was a large difference in the amount of bar presses each of the rats exhibited. This is likely because the IVR rats had to press the bar for an unknown number of times in order to receive a food pellet.

Comparison of CRY and IVR After Shaping 8 Hypothesis 4 Hypothesis 4 stated that during extinction, the target behavior would increase with the removal of the reinforce. Figure 2 shows this to be true for both rats. When the rats had no motivation to press the bar, they lost interest. There were several extinction bursts, but after the time often minutes ended, the rats had lost a considerable amount of interest in the target behavior.

Implementation This project is applicable to humans in that it demonstrates support for the Behavioral approach to psychology.

A traditional Skinner Box was used, and the traditional ideas of providing reinforcement and punishment as a means of controlling behavior were applied. The ability to compare rat behavior to human behavior is questionable, but a widely- accepted theory was supported in this study.

Strengths and Weaknesses This study was done in a small laboratory setting with only two rats. The small number of participants in this study may be a hindrance in the application of the results to multiple facets. To generalize the study, more rats should be used to test the various shaping methods.

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Another weakness of this study is that the time measurement was imprecise. The time was kept by the lab assistant, and she occasionally forgot to call the time. Human error plays a part in this as well. Another factor human error likely played a part in is the collection of the data. Although the students were all specifically trying to be accurate in their recordings, it is not likely that even a single person recorded all of the data refectory. One more weakness includes the fact that the non-target behaviors were not recorded during training of the CRY rat.

The data would have been more easily compared if they were consistent across the experiment. Comparison of CRY and IVR After Shaping 9 A major strength in this procedure was the accuracy of averages across the data. Though there were slight differences in the reports of collected data, much of the numbers were close in range. Another strength in this experiment was that the rats being observed were modeled after live rats in a laboratory. Therefore, he experiment was able to be conducted without the use of live animals, and the reported data were likely similar to that from a study on live rats.

Further Research This study would be interesting to implement in the lives of humans. Many would argue that rats are different from humans, and therefore, this behavior does not apply to humans. Shaping human behavior would be difficult to test in a laboratory setting, but if possible, it would be interesting. Parallelism in the observation groups is a good idea to add to further studies. Because this study was missing a few observations, the data collected was less useful to those analyzing it.