

Running Head: Attention and Negative Stimuli

Changes in Attention when Presented with Negative Stimuli

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Abstract

This research used rats to examine how lever pressing was affected by extra rewards given to those obtained by lever pressing. Over three days, the rats were trained to press the lever in two groups. On a fourth day, one group was given additional pellets independent of responding. On the fifth day, no food was given until both groups were given two pellets the last five minutes. It was found that the free food group pressed the lever significantly more than the control group on day four and significantly less on day five. In the five-minute recovery phase, both groups pressed the lever more, but the control group exhibited greater recovery than the free food group. We conclude that free food encourages rats to press the lever initially but reduces pressing when food is removed.

Change in Reaction Time to Face Finding when Primed with Negative Stimuli

Introduction, blah, blah, blah...

Method

Participants

Twenty-eight Ohio Wesleyan students participated in the study. All were currently taking Psychology 310: Research Methods. They were of mixed gender and age, though all were juniors or seniors.

Apparatus

Pentium class computers running DMDX software were used in the study.

Procedure

Participants were tested on the same material with either positive or negative priming words. Reaction times were then measured for finding oddball faces of either positive or negative valence. Using a mixed modal design, face valence was measured within groups and prime valence was measured between groups.

Participants were randomly assigned to two groups, half in each group. One group participated in the study at 2:10pm and the other participated at 3:10pm. At the specified time, the students were instructed to enter the computer laboratory and take a seat. They were asked to get into a comfortable position at a fixed distance from the screen and remain there for the duration of the study. Next, they were asked to follow the onscreen instructions.

Participants were randomly assigned to one of two groups—one which was primed with positive words, and the other which was primed with negative words. The

positive words were friend, music, sunshine, and Friday. The negative words were war, cancer, cockroach, and crime.

Participants were asked to stare at a fixation point in the center of the screen with a visual angle between two and five degrees. Each corner of the screen represented one of four quadrants. They were asked to hit a key in response to any stimuli they saw flashed on the screen as fast as they could, and were told they would be evaluated for response time. If they saw a stimulus on the left side of the screen, they were to hit the left shift key, while if they saw one on the right, they were asked to hit the right shift key. The priming word was first displayed for thirty-two milliseconds and was then backward masked by replacing the word with number signs of the same length in the same location for two hundred fifty-six milliseconds. A one thousand millisecond inter-trial interval was included between each trial in which no stimuli were presented. In each group, twenty of each of that group's priming words were flashed, five in each quadrant, for a total of eighty presentations of the stimulus words.

Next, the participants were asked to search a grid of faces and hit a key to decide if they were all the same or if one was different. The faces were arranged in a three by three grid. The same pieces were used to construct both a "happy" face and an "angry" face, with the only changes being in eyebrow angle and position of mouth. Faces were similar to those found in Öhman, 2001.

The face task was presented eighteen times for each scenario: all happy, all sad, eight happy and one angry, and eight angry and one happy. All nine possible positions of the oddball face were accounted for, with two presentations of each valence in each location. Once again, response time was recorded. If the participant did not answer within

five seconds, a “:::no response:::” feedback was given. If the answer was incorrect, they were given a “:::wrong:::” feedback. If they answered correctly, no feedback was given.

Results

The dependent variable in the study was reaction time after exclusions. Participants’ incorrect answers were thrown out when computing data. Outliers were also excluded for each subject. The mean response time for oddball faces with a positive valence was 1639.1 milliseconds, with a standard error of 73.7. Mean response time for oddball faces with a negative valence was 1535.1 milliseconds, with a standard error of 78.21. The difference in oddball valence effect on reaction time was evaluated with the ANOVA test, with $F(1,18) = 7.593$, $p = .013$.

The following graph illustrates the lever pressing of both groups of rats:

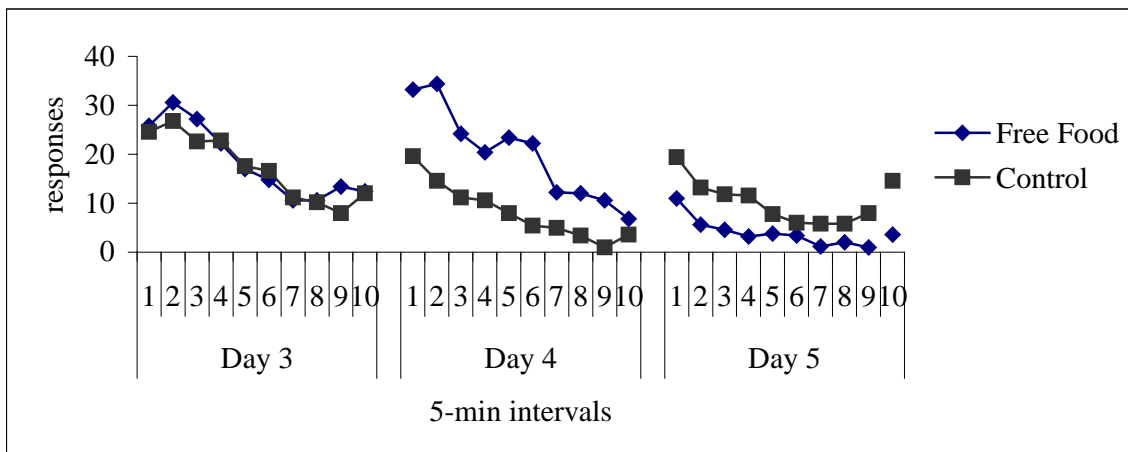


Figure 1. Mean rates of lever pressing in free food and control groups in five minute intervals during days three, four, and five.

Discussion

A group of rats given food non-contingent on lever-pressing showed an increase in the amount of lever-pressing when they also received food on a fixed ratio schedule for pressing over a control group. However, this free food group showed a faster extinction of pressing when the food was removed. The free food group also exhibited less spontaneous recovery when free food was introduced.

The higher rate of pressing on day four by the free food group seems to be caused by the extra pellets which were given, as this was the only notable change from the control group. Perhaps the extra pellets encouraged the rats to press more because they associated the lever pressing with an even greater reward, while the control group maintained the same relationship between lever pressing and pellets received.

The more rapid decrease of lever pressing by the free food group over the control group on day five may be due to the fact that while the control group was used to receiving only one pellet, the free food group had gotten used to receiving extra pellets, so they suffered an even greater perceived loss. This loss may act as a stronger negative punishment, preventing the rats from pressing. It may also be that the lack of pellets was more noticeable for the free food group because it had been receiving more pellets than the control group. Another explanation of this is that the free food group had learned that the receiving of pellets was not always contingent with lever-pressing while the control group learned that it was always contingent while in the box and thus learned a greater relationship. These results are consistent in part with Rescorla (1968), noting that in conditioning, the contingency of US upon CS is of primary importance. Interestingly, the control group never stopped pressing the lever on average, while the free food group did.

During the last five minutes of day five, both groups were given two pellets, regardless of behavior. Some lever pressing was reinstated by the free food group, but much more was observed of the control group. It is probable that the control group had more confidence that their lever pressing would now result in more pellets. The control group had formed a stronger connection between their lever pressing and receiving pellets, because they received pellets only on the fixed ratio and never before without pressing. The free food group's relationship between lever pressing and pellets was weaker because they received extra pellets when not pressing the lever.

An alternative theory for these results suggests that the control group rats that were given less pellets may have learned to like pressing the lever more with a smaller reward. The free food group who received extra pellets may have not learned so much to like the lever as the larger reward they seemed to be getting. Therefore, when the pellets were no longer given on day five, the free food group had less incentive to keep pressing, since they were much less interested in the lever to begin with.

Future research should investigate other samples of rats or other animals to see if these results are repeated. The small size of five rats per group may have contributed to anomalous results, so a greater amount of subjects should also be examined. An interesting study might be one in which a third group is given a pellet every two and a half minutes on day four without any pellets for lever pressing. Also, research should be focused on determining the relationship between contiguity and contingency; discovering what it is that makes the rats in the free food group have lower lever pressing during both extinction and recovery phases.

References

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