

Novel Aerial Predator Experiment

Subjects: Cotton-top Tamarins (SH, LS, JM, EN, SP)

Goal: The goal of this experiment is to categorize a naïve tamarin response to an aerial predator. The experiment breaks down into two particular questions. First, can the subjects distinguish between a novel aerial predator and a man-made “looming object”? Second, if such a distinction is made, what categorizes the subjects’ response to each stimulus? We predict that the subjects will discriminate between the animated predator and the inanimate looming object by reacting more often, more quickly, and more intensely to the predator compared to the looming object.

Procedure: Each trial contains a single presentation. The subject is removed from his homecage and placed into a large cage in a room at the end of a long hallway. The walls and ceiling of the room are covered with sound foam in order to minimize disruption of sound recordings. The subject cage is approximately 8ft x 5ft x 3ft and is vertically divided into two halves by a wire screen. The front of the cage is a thin plastic mesh, and the sides are stiff board. On each side of the cage are mirror image perches for the subjects to climb on during the trial.

In terms of recording, video and audio data is taken during each presentation. Two directional microphones are hung from the ceiling facing each side of the cage. Two video cameras record different points of view during the trial. One faces down the hallway away from the monkeys and records the oncoming predator. The second faces the monkeys and records their reactions. During all presentations, at least three minutes of visual and audio data are recorded before the stimulus is presented. In order to keep the monkeys from anticipating the stimulus, the amount of time before each presentation is randomly varied between three and six minutes. Post-presentation time is kept to at least three minutes, but will rarely exceed four.

During a goshawk presentation, the bird is kept out of sight behind a barrier at the opposite end of the hallway. After at least three minutes, the bird is released by an experimenter and comes around the corner into the subject’s sight. The bird then flies down the hallway at the subject cage and veers off at the last second to perch in a closet-like space next to the cage. A second experimenter then pulls a wire from outside the room that releases a curtain to fall in front of the hawk, thus minimizing the sound the bird may make during the remainder of the trial. The experiment continues post-presentation for three minutes or more, and at the end, the second experimenter says “stop” to signify that the trial is over.

During a looming presentation, a cylindrical object approximately the size of the goshawk is sent down the hallway on a long wire. At the time of presentation, the first experimenter unhooks the looming object and pushes it down the line. It travels at approximately the same speed as the bird and follows the same average flight path. The wire track ends in the closet-like space containing the bird’s perch, and once the looming reaches the end of its flight path, the curtain is dropped. The second experimenter

continues recording the subject's react until at least three minutes have passed after the presentation, at which point the experimenter says "stop" to signify the end of the trial.

The third trial type, a control, is run with all the steps of a goshawk or looming trial, except nothing is presented. Instead, after about three minutes, the curtain is dropped without a stimulus, and the monkey's behavior is recorded for a further three minutes.

Each of the five subjects will receive six presentation blocks. Each block consists of one goshawk, one looming, and one control trial presented in random order. Each presentation is recorded in the raptor notebook along with notes on what happened during the trial. Alarm reactions will be coded for alarm duration, call frequency and intensity, delay between the call and the first visible sign of the stimulus, and general movement within the cage.

