

The Effects of Visual Color Stimuli on Zebra Finch Behavior and Stress Response

Introduction:

Animals are affected by many environmental stimuli, including visual stimuli. Some stimuli activate the secretion of stress hormones, such as corticosterone (CORT), or act as a non-stressful positive stimulus. Zebra finches (*Taenopygia guttata*) are songbirds that can see in the entire visual light color spectrum as well as UV light (Hunt et al, 1997). Colors, especially red, are important in female mate choice (Garson et al., 1980). Therefore, altering the colors of the housing environment may elicit a stress response.

Method:

This project is currently ongoing. Experimental birds are exposed to 24 hr of a color stimulus near their cages (22"x 28" rectangular colored paper; green, blue, red, brown, yellow) with white as the control. Groups of adult males and adult females (n= 5/sex) are housed separately. Baseline plasma CORT levels are measured 24 hr before and after color exposure using radioimmunoassay (RIA). Behaviors, recorded pre- and post-color exposure, include perching distance relative to the color stimulus, gazing at the stimulus, and typical stress behaviors (beak open).

Preliminary Results:

Baseline plasma CORT levels after 24 hr of green color exposure have been collected. Males and females (n = 3/sex) exhibited a nonsignificant increase in CORT level (less than 10 ng/ml increase above baseline). Two had higher baseline CORT in comparison to their CORT level after 24 hr color exposure. Blood for 2 birds was not collected. The baseline blood and blood after 24 hr color stress for the white (control) and red exposure have been collected and the RIA will be run after the plasma is collected from the remaining color exposure experiments.

Conclusions thus far:

There was no significant change in CORT levels after green color exposure. The higher baseline cort in two birds may have been due to handling. Colors play an important role in courtship behavior, even such that color bands impact mating choice preference (Burley et al. 1982). Therefore, it is expected that the color red elicits a stress response.

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