The Science of Anxiety, Phase II: The Effects of Physiological and Psychological Stress Factors on Short-Term Memory Performance in Pomacea diffusa

Hummel, Benjamin

Anxiety is the change in homeostasis caused by a negative outside stimulus. The spike-topped apple snail has been revealed to be sufficient model for this experiment, since individual neurons have more or less the same roles as ours do. Snails are also very easy to ‘teach’ how to do simple tasks, and are known to remember where food is. Knowing this, the student researcher had constructed an experimental arena for them to acclimate to. The student researcher hypothesizes that, if Pomacea diffusa is subjected to physiological or psychological stress factors, then the psychological stress factors will have greater impact upon individual short-term memory performance in Pomacea diffusa. The student researcher put the five test subjects through 250 trials, 50 trials for all 5 snails. Each trial set will be composed of 10 trials, for each of the four variables. 10 trials will also be run for the acclimation (control) trials. These 10 acclimation trials will allow the snails to familiarize themselves with the tank. The hypothesis appeared to be null. While psychological stress factors, like the presence of a live predator, definitely affected both the time it took to complete trials (and whether or not it found the food) it was not as effective as physiological stressors, such as prodding. In conclusion, prodding proved to affect the test subjects the most, followed by the presence of a live predator. Deoxygenization of the environment was the third-most effective, and the scent of a predator was least effective of all variables.

Awards Won: