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Section 103

Problem Set #3

1. ***“Only animals have cognition.”* Briefly present an argument against this statement. (1 pt).**

We know that not only animals have cognition, as some plants have shown evidence of cognition, including habituation and sensitization. In 2014, Monica Gagliano studied the mimosa plants and found that they showed signs of remembering different stimuli and learning the appropriate response over time.

1. **What kinds of memory does a hummingbird utilize while foraging for nectar on its territory? (3 pts)**

The hummingbird must utilize their procedural memory to remember how to extract the nectar from a specific flower, as well as working memory to remember which location/species/plant/inflorescence/blossom they just fed from. Additionally, hummingbirds must also use their reference memory to remember which areas or flowers are best for feeding and which ones usually have little nectar.

1. **In the chunking experiment, by what parameters did the Fixed Location group of rats perform better on the RAM task than the Random Location group? (3 pts)**

In the RAM chunking experiment, the Fixed Location group had fewer working memory errors, fewer trials to criterion, and larger chunk size (from 1 to 4) than the Random Location rats. The Random Location rats were slower than their counterparts and unable to increase their chunk size.

1. **How did Delayed Nonmatch to Sample task measure species differences in memory? (3 pts)**

There was an experiment that tested Clark’s Nutcrackers, Pinon Jays, Mexican Jays, and Scrub Jays to see if the percentage of seeds in their diet would affect their spatial memory capacities. The Delayed Nonmatch to Sample task had a spatial version, where the stimulus was a white light and the bird had to say what side (left/right) the stimulus wasn’t on, and a non-spatial version, where the stimulus was a red or green light, and the bird had to choose the opposite. They also included Individual Titration, so when the bird completed a task correctly, they would increase the time delay. The results showed that while the species performed somewhat similarly on the non-spatial task, the Clark’s Nutcracker significantly outperformed the other species in the spatial task and could handle a much longer delay. This matched the hypothesis because the Clark’s Nutcracker has a 100% seed diet, which is more than any of the other species, and shows that different species have different abilities when it comes to memory.