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The following Master project proposals are from year 2022. They can give you an impression which kind of projects are possible in the department of Biopsychology.

Master Project: Effects of Distinction and Novelty on Memory and Attention

Research with humans and other mammals has extensively demonstrated that our attention and memory systems are biased towards distinctive or novel stimuli. This systematic bias seems reasonable as it is important to quickly detect changes in the environment. If this is the case, then it is also reasonable to assume that other species will show a similar bias. There is some evidence to suggest that pigeons are attracted to novel objects and show a learning benefit to distinctive stimuli, but there is a paltry amount of research compared to mammals. One goal would be to further investigate the effects of distinctive or novel stimuli on avian attention and memory. Multiple behavioral experiments will be conducted in order to disentangle the effects of both cue distinctiveness and novelty on attention and memory processes separately. This would be accomplished via visual search, working memory, and long-term memory tasks.

While pigeons may have similar behavioral results, it is unclear if it would be supported by similar neural mechanisms. In mammals, there is evidence that processing distinctive and novel stimuli relies on the hippocampus, posterior parietal cortex, and dorsolateral prefrontal cortex. The role of the avian hippocampus outside of spatial tasks is debated, but very recent evidence indicates it may be sensitive to novelty. Therefore, a complementary goal of this research is to determine if the hippocampal formation in pigeons responds to novel and distinctive cues as seen in mammals. Students would gain experience in designing and conducting behavioral experiments, investigating hippocampal activity, and analyzing data.

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