

# Proposal Computational Psychology

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## 1 Background

The problem are project is focusing on is Shepard's ideal generalization problem. The generalization problem focuses on how humans build hypothesis spaces for a given consequence after observing stimuli. In the paper "Generalization, similarity, and bayesian inference", they discuss how using a model of bayesian inference, we can predict the probabilty of given stimuli being included within the consequential region [Tenenbaum]. The model uses the equation  $p(y \in C \mid x) = \sum_{h: y \in h} p(h|x)$  where  $h$  is a hypothesis from the hypothesis space  $\mathcal{H}$  and  $p(h|x)$  is the posterior probabilty of the hypothesis after observing  $x$ . We plan to extend this model to investigate how including negative examples within the  $x$  vector( $x$  is the observed stimuli) affect how the model limits hypotheses. We also plan to explore how different distrubitions and models compare to the original model for generalization.

## 2 Question

- How do negative examples affect the model?
- How do other probabilistic models compare to the original model?

## 3 Method