Title: Rat Sequential Learning for Impoverished Serial Patterns Favors Multiple-Item Learning

Author List: Caitlin Hosey, Megan E. Miller, Jessica L. Sharp, and Stephen B. Fountain

Abstract:
When rats learn highly-organized serial patterns they formulate rules based on pattern structure that aid in correctly making different responses for different structural element types. For this experiment, we explored how simplifying pattern structure might allow for further investigation of the learning mechanisms involved in chunk-boundary element stimulus-response learning and violation element multiple-item learning. Four 10-element serial patterns were designed to assess acquisition for these element types separately with special attention to learning chunk-boundary versus violation element types. Adult rats were trained on one of four serial patterns: two patterns had one chunk-boundary in cued or uncued form, and two patterns had one violation element in cued or uncued form. After acquisition, rats received a drug challenge by i.p. injection of the anticholinergic drug scopolamine. Results indicated that all pattern element types were learned at the same rate despite containing different element types presented cued and uncued. Scopolamine caused high error rates for all higher-order elements as observed in previous results with violation element retention under scopolamine. Thus, chunk-boundary elements and violation elements were both encoded similarly as violation elements. These similarities in encoding might be due to the impoverished pattern structure that favored multiple-item learning over chunking.