# EVENT SCHEMAS: LEARNING AND USE IN HUMANS AND RECURRENT NETWORKS

Andre Beukers, Kenneth Norman

## Curriculum A A A B B B vs A B A B A B

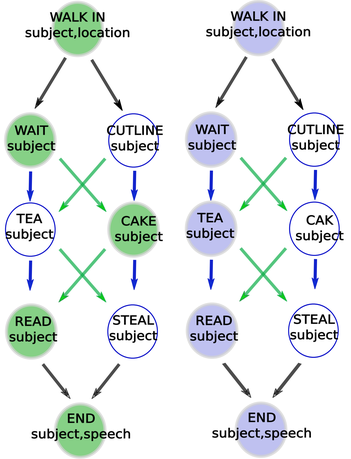
- The effects of interleaved study on category learning has received long standing support [1]. However, recent studies have shown the effects of curricula are not ubiquitous but depend on category structure [2]. So far the learning effects of curriculum have focused almost exclusively on category learning. Here we were interested in curriculum effects in a statistical learning prediction task.

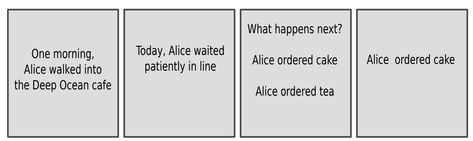
## Event cognition theory

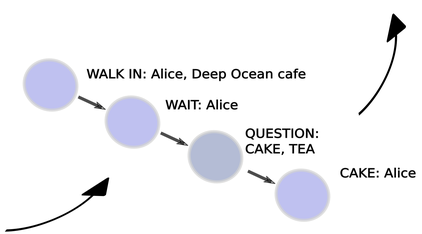
- How do we learn and use models of the environment for prediction? Event cognition proposes that the mind segments continuous experiences into discrete events [3] so that the appropriate event model (i.e. schema) can be applied for prediction [4]. Because the driving learning signal of event segmentation is prediction error, which can only occur if there is a prediction or strong expectation, we hypothesize that event learning would also benefit from blocked curricula.

## Approach:

* 2AFC prediction paradigm
* algorithmically generated narratives
* manipulate curriculum
* measure learning and generalization

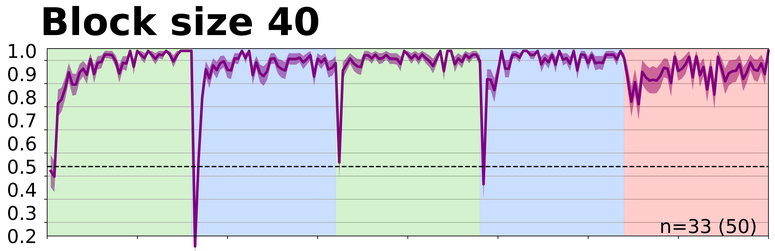


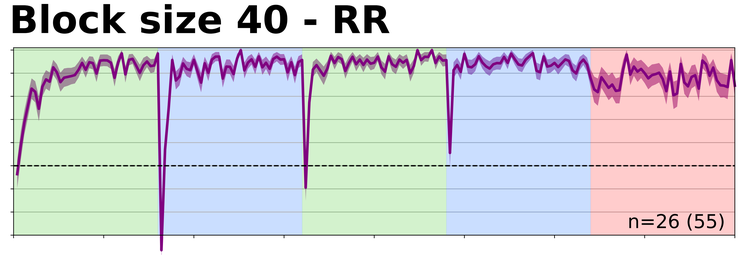



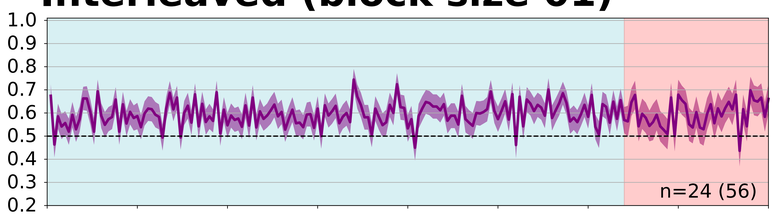



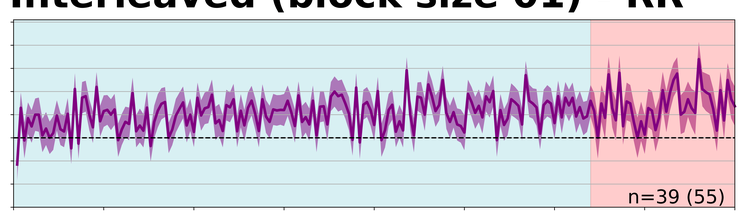

## Discussion & Future directions

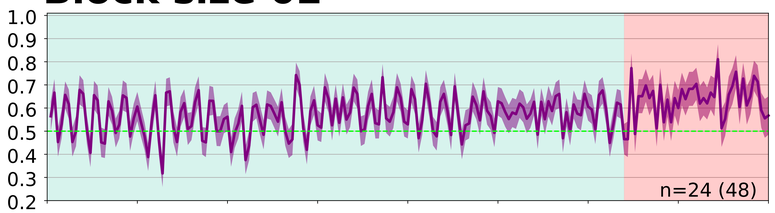
- Here we establish a behavioral paradigm for studying event cognition. We have shown that unlike the majority of the category learning literature, learning can only occur when environments are experienced in blocks. To better understand why this is the case we are developing hypotheses about how and when information interfere and implementing and testing these hypotheses using recurrent neural network archiectures.

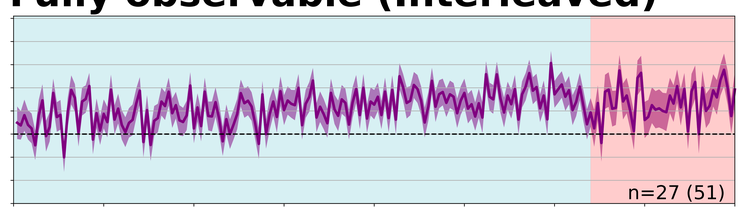


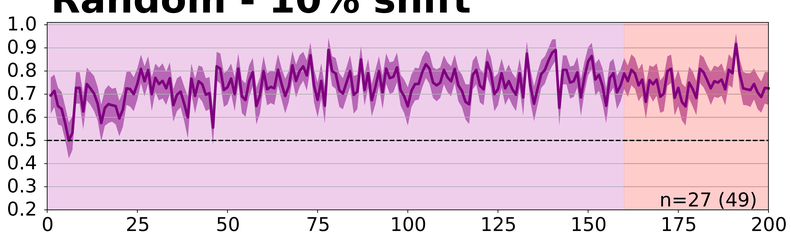



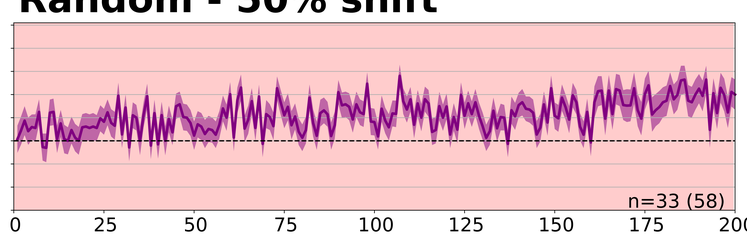




References
[1] Schmidt & Bjork, 1992
[2] Carvalho & Goldsone, 2017
[3] Kurby & Zacks, 2007
[4] Franklin et al., 2019

This project was supported by ONR MURI N00014-17-1-2961