Computational Modeling of Variations in the Temporal Contiguity Effect

Linh T. T. Lazarus, Abigail M. Dester, Mitchell G. Uitvlugt, & M. Karl Healey

CBCC LAB
DEPARTMENT of PSYCHOLOGY
MICHIGAN STATE UNIVERSITY

Introduction

- Temporal Contiguity Effect (TCE): recall of one event triggers recall of other events originally experienced nearby in time (Kahana, 1996).
- Retrieved Context Models attribute the TCE to automatic encoding of temporal information whenever new memories are formed (Healey, Long, & Kahana, 2019).
- Various experimental manipulations modulate the size of the TCE (Healey, Long, & Kahana, 2019).
- Can Retrieved Context Models account for how these manipulations change the size of the TCE?
- Here, we try to model the effect of orthographic distinctiveness.
  - Lists composed of orthographically distinct items dramatically reduce the TCE (McDaniel et al., 2011).

Methods

Amazon Mturk

- N = 313
- Free recall paradigm
  - 3 lists per participant, with 10 words per list

Conditions

- Pure lists of either control or distinct items

Computational Modeling

- Retrieved Context Model fit using genetic algorithm
- Both conditions fit simultaneously, allowing specific parameters to vary between conditions

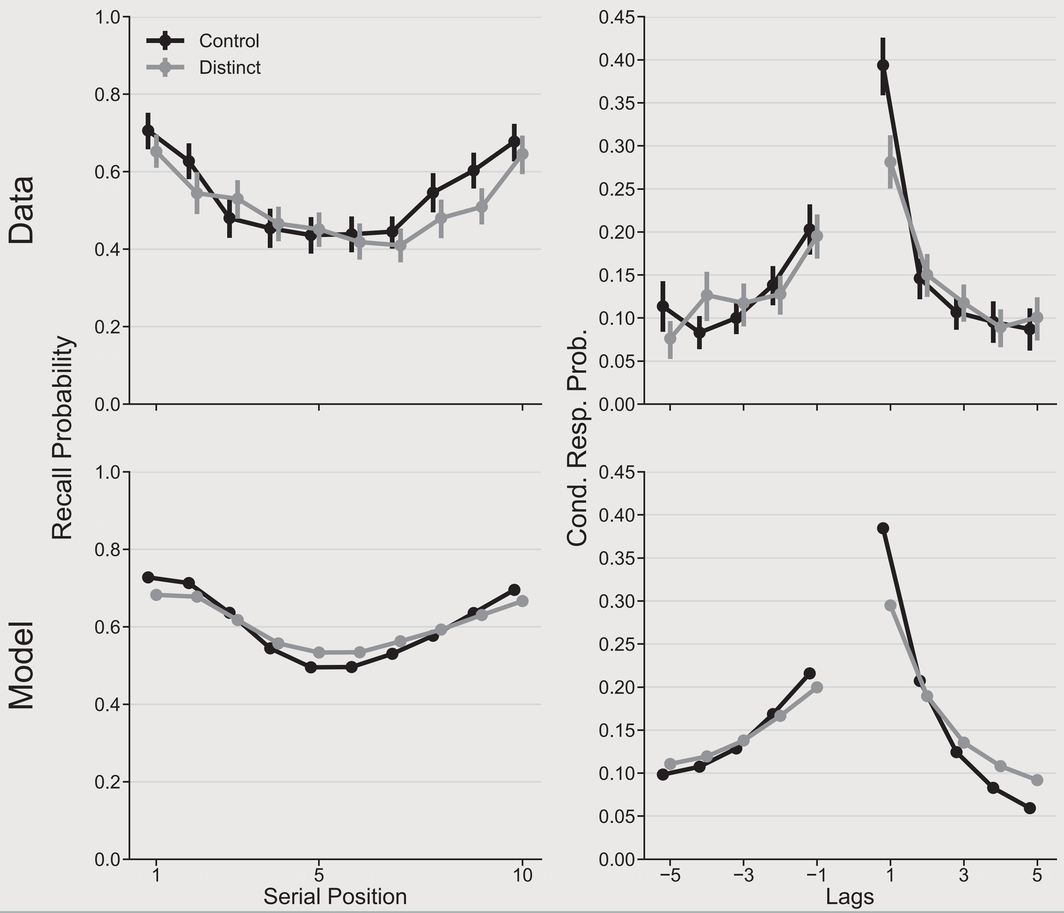
Control Items (n = 152) Orthographically Common	Distinct Items (n = 161) Orthographically Distinct
amplification	afghan
bison	fjords
eraser	khaki
parachute	alfalfa
ruler	svelte
cube	hyena
kennel	gnaw
refinement	lymph
sleet	crypt
cedar	asphyxiation

Results

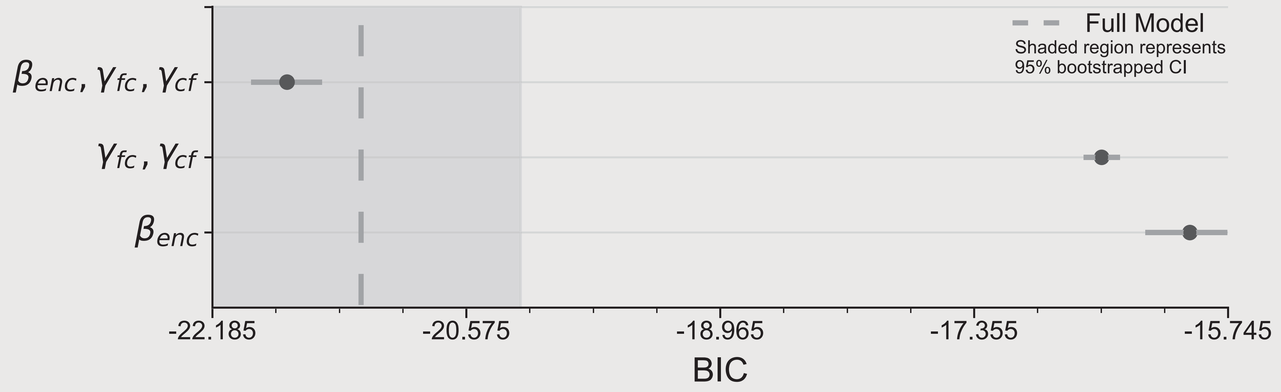
Best Fitting Model

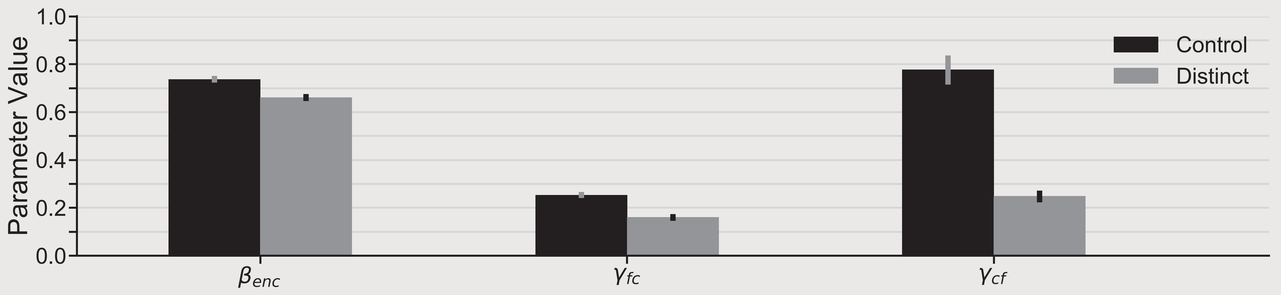
Varying parameters by condition: β_{enc}, γ_{fc}, γ_{cf}

All error bars are 95% bootstrap CI



Which parameters have to vary?





Conclusions

- Orthographic distinctiveness attenuates, but does not eliminate, the TCE.
- The Retrieved Context framework is able to fit behavioral results by assuming distinctiveness changes context drift rate and the balance of pre-experimental vs. experimental context.

lazarus6@msu.edu

CBCC Lab: cbcc.psy.msu.edu