

# Computational Modeling of Variations in the Temporal Contiguity Effect

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## 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, 2018).
- Various experimental manipulations modulate the size of the TCE (Healey, Long, & Kahana, 2018).
- 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).

## 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

## Methods

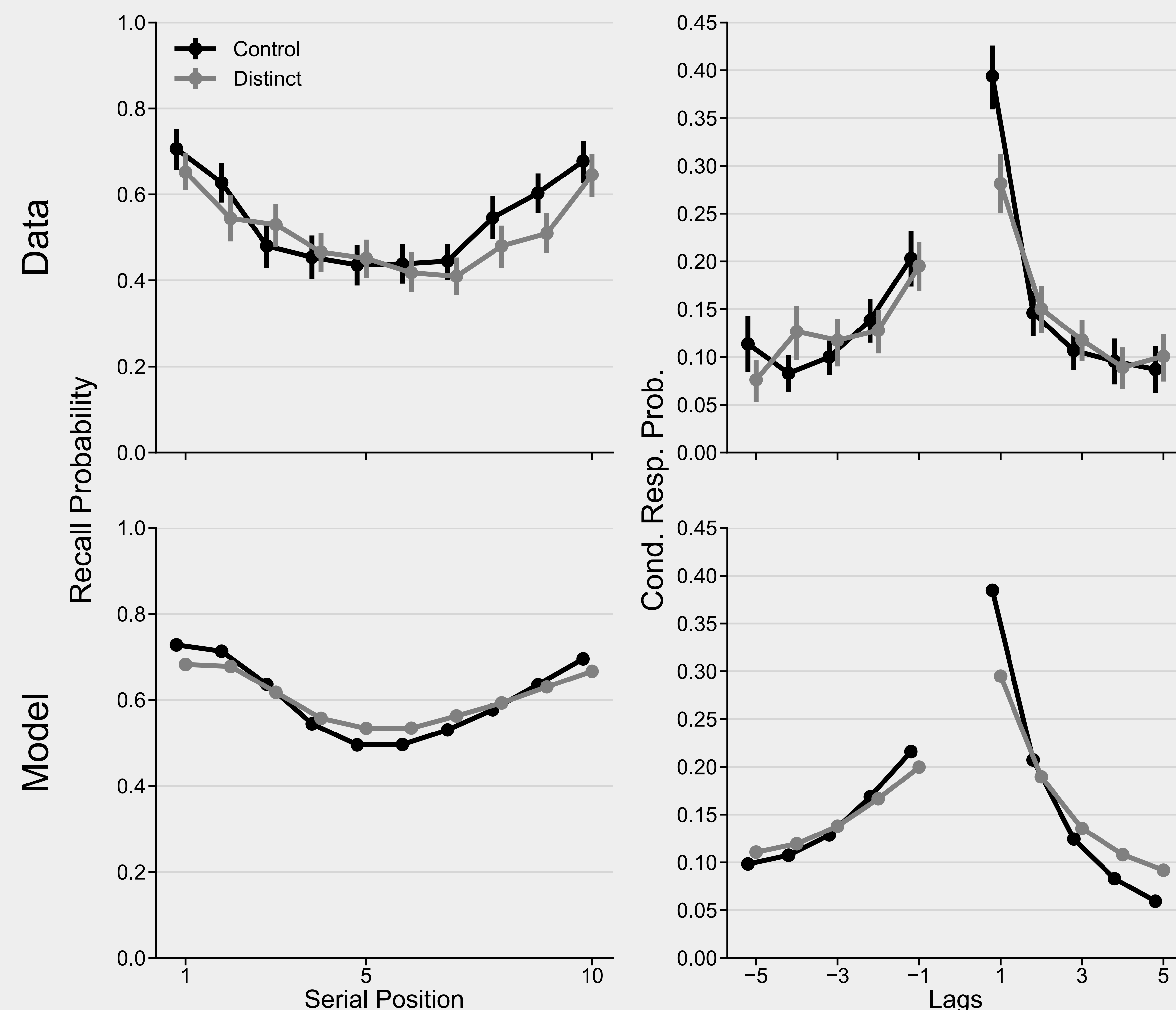
Control Items (n = 152) Orthographically Common	Distinct Items (n = 161) Orthographically Distinct
amplification	afghan
bison	fjords
eraser	khaki
parachute	alfalfa
ruler	svelte
cube	hyena
kennel	gnaw
refinement	lymph
sleet	crypt
cedar	asphyxiation

## Results

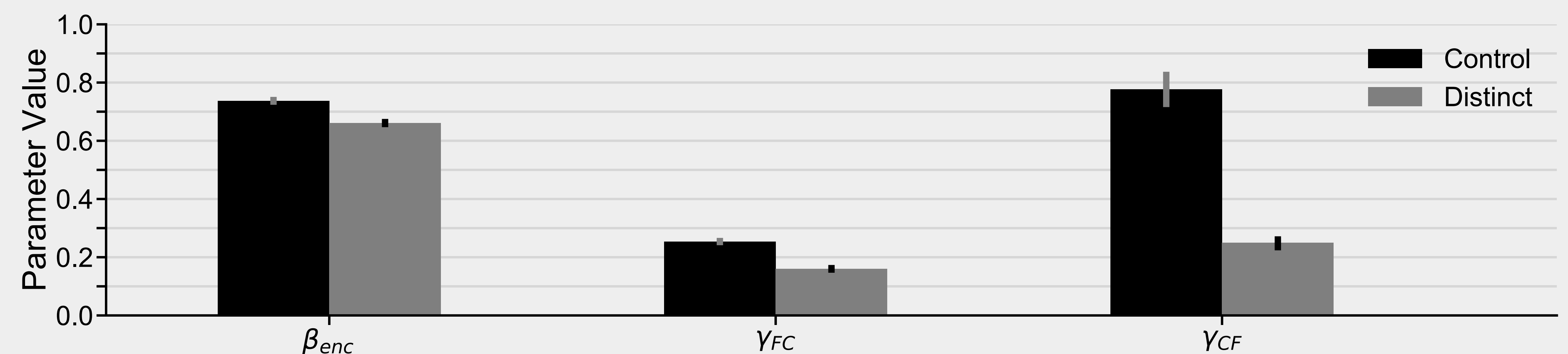
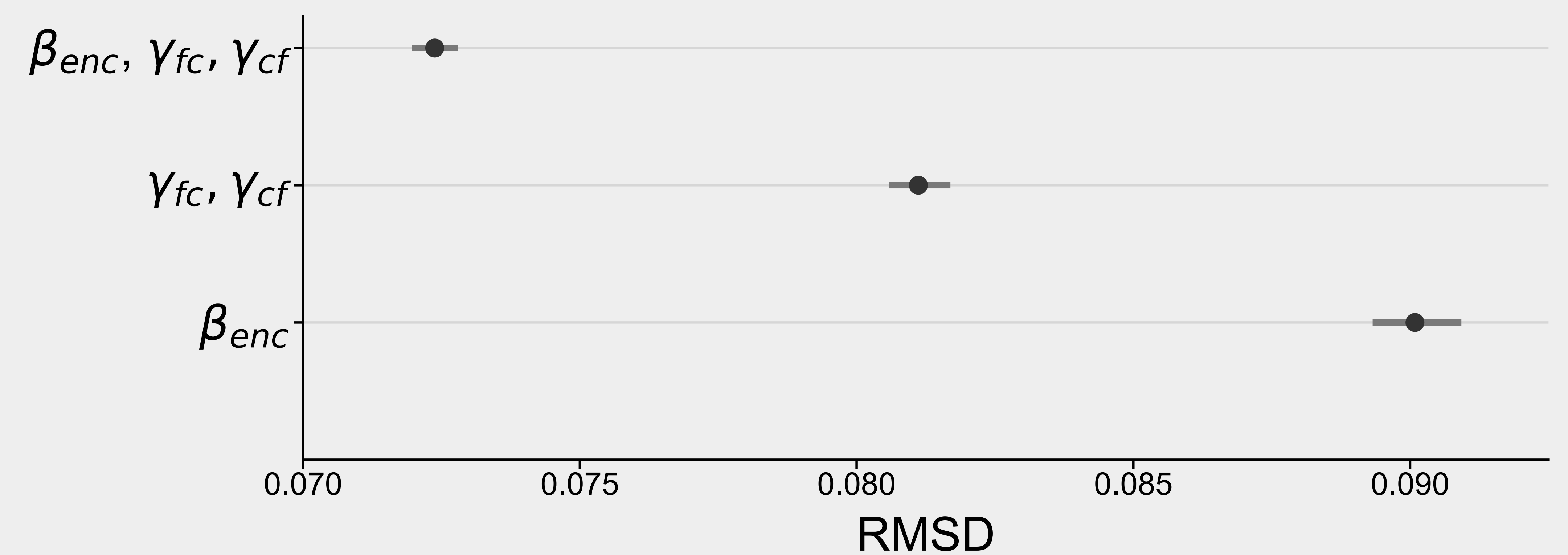
All error bars are 95% bootstrap CI

### Best Fitting Model

Varying parameters by condition:  $\beta_{enc}$ ,  $\gamma_{fc}$ ,  $\gamma_{cf}$



### 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.