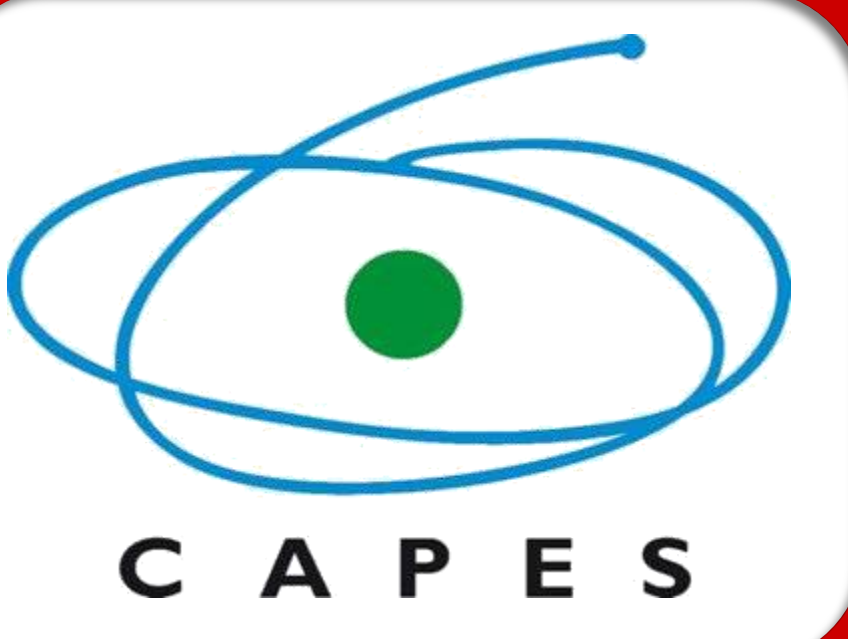


Bivariate Recollection in Recognition

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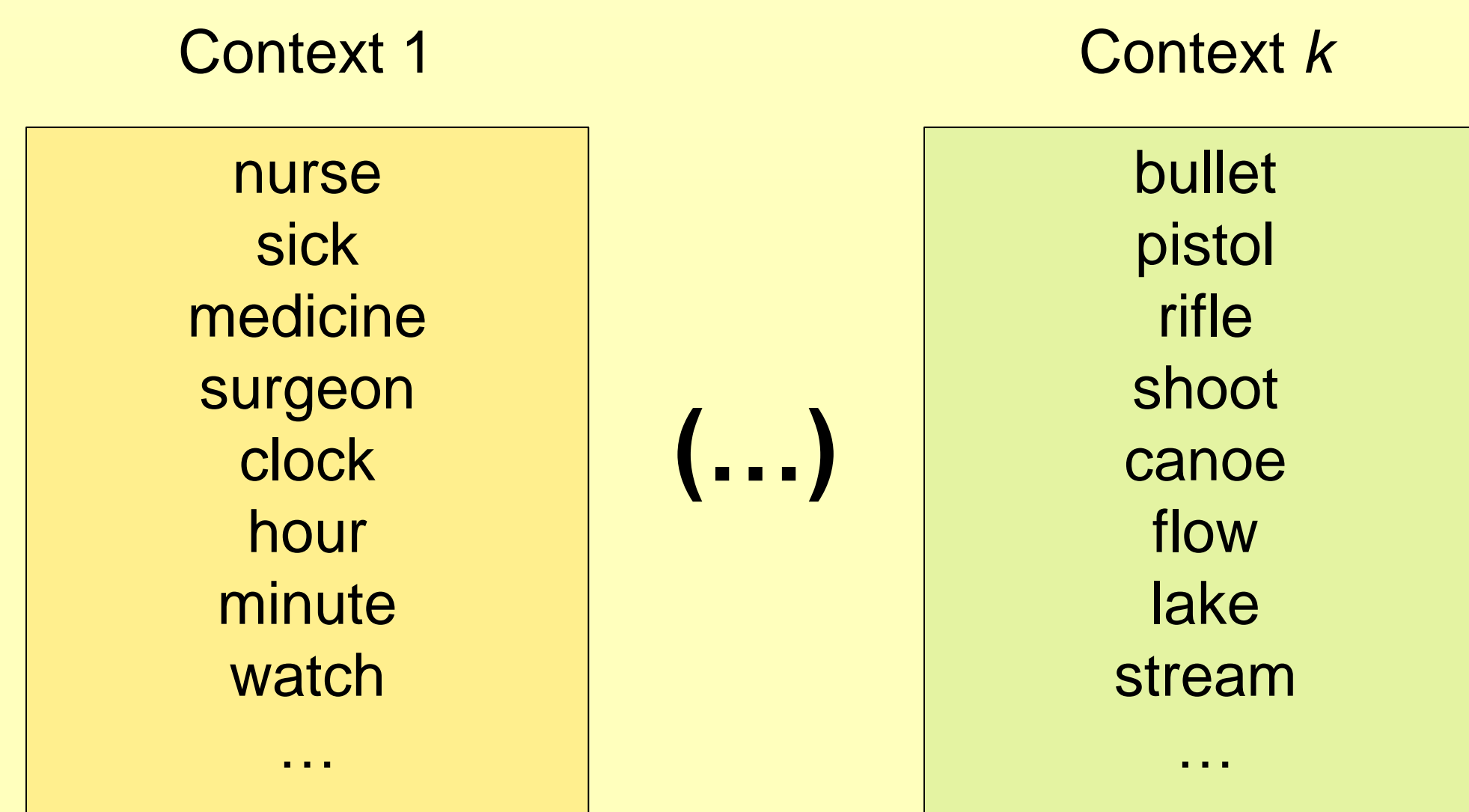
¹ Cornell University, ² CAPES Foundation



Overview

- Recollection has traditionally been assumed to be a univariate process that retrieves contextual details from an item's prior occurrence.
- We tested the hypothesis that recollection is bivariate, consisting of its traditional form (context recollection) and a second form that retrieves studied items per se (target recollection) (Brainerd, Gomes, & Moran, 2014)
- A novel procedure—conjoint source recognition (CSR)—separates context from target recollection for true and false items.
- CSR: Subjects study lists of semantically related words presented in at least two distinct contexts and then receive a recognition test composed of targets, related distractors, and unrelated distractors that are factorially crossed with four types of instructional conditions.
- The data generated by this procedure were analyzed with mathematical models that assumed either univariate or bivariate recollection.
- Main findings:
 - Models that implemented bivariate recollection provided better fits to CSR data than univariate recollection models
 - Target and context recollection parameters were dissociated over conditions.

Conjoint source recognition



Test instructions

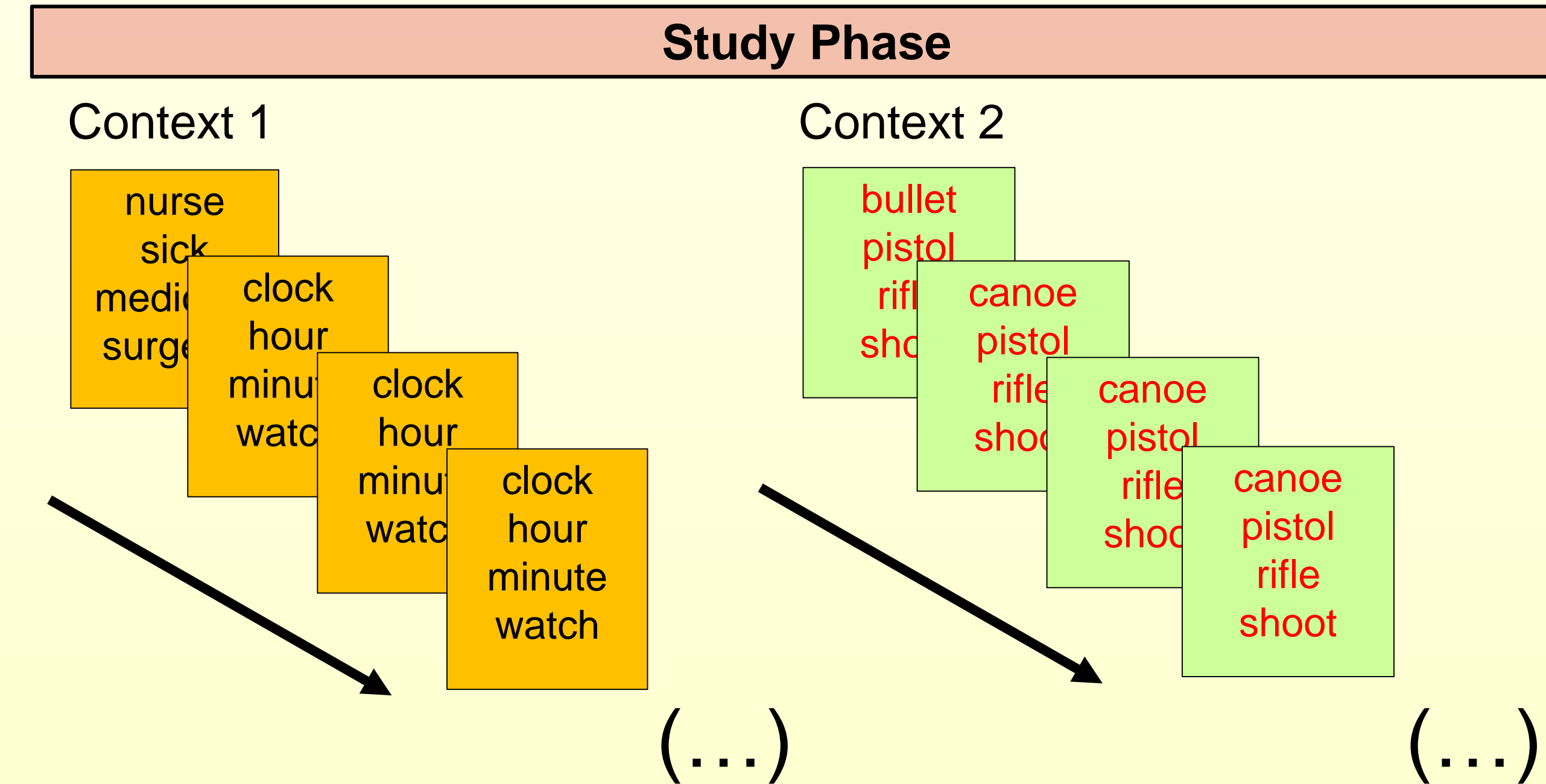
Targets and related distractors from each context, as well as unrelated distractors, are factorially crossed with four types of instructional conditions:

- Verbatim for each context (V_i): "I saw it in context i "
- Verbatim for any context (V): "I saw it in one of the contexts"
- Gist for any context (G): "I did not see it before but it is related to a word from one of the contexts"
- Verbatim + Gist for any context (VG): "I either saw it in one of the contexts or it is related to a word that I saw before"

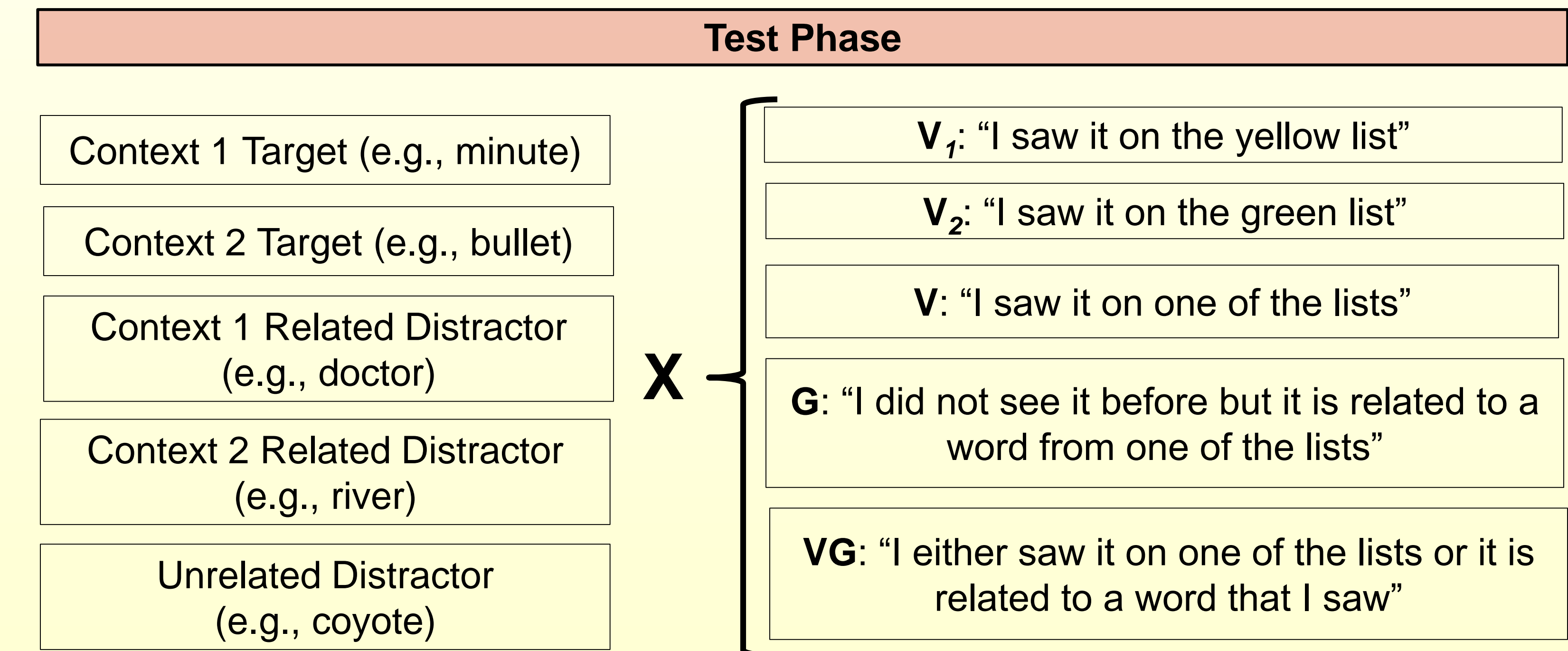
- Acceptance and rejection frequencies can be analyzed with a multinomial model that measures the following parameters:
 - Target recollection (TR_i), context recollection (CR_i), familiarity (F_i), and response bias (bV_i , bV , bG , bVG)

Method

- Subjects:** 63 college students participated for extra credit
- Materials:** Word lists selected from Arndt (2012)
- Procedure:**



- Experimental design:** 2 (list repetition: one time, three times) – Within Ss

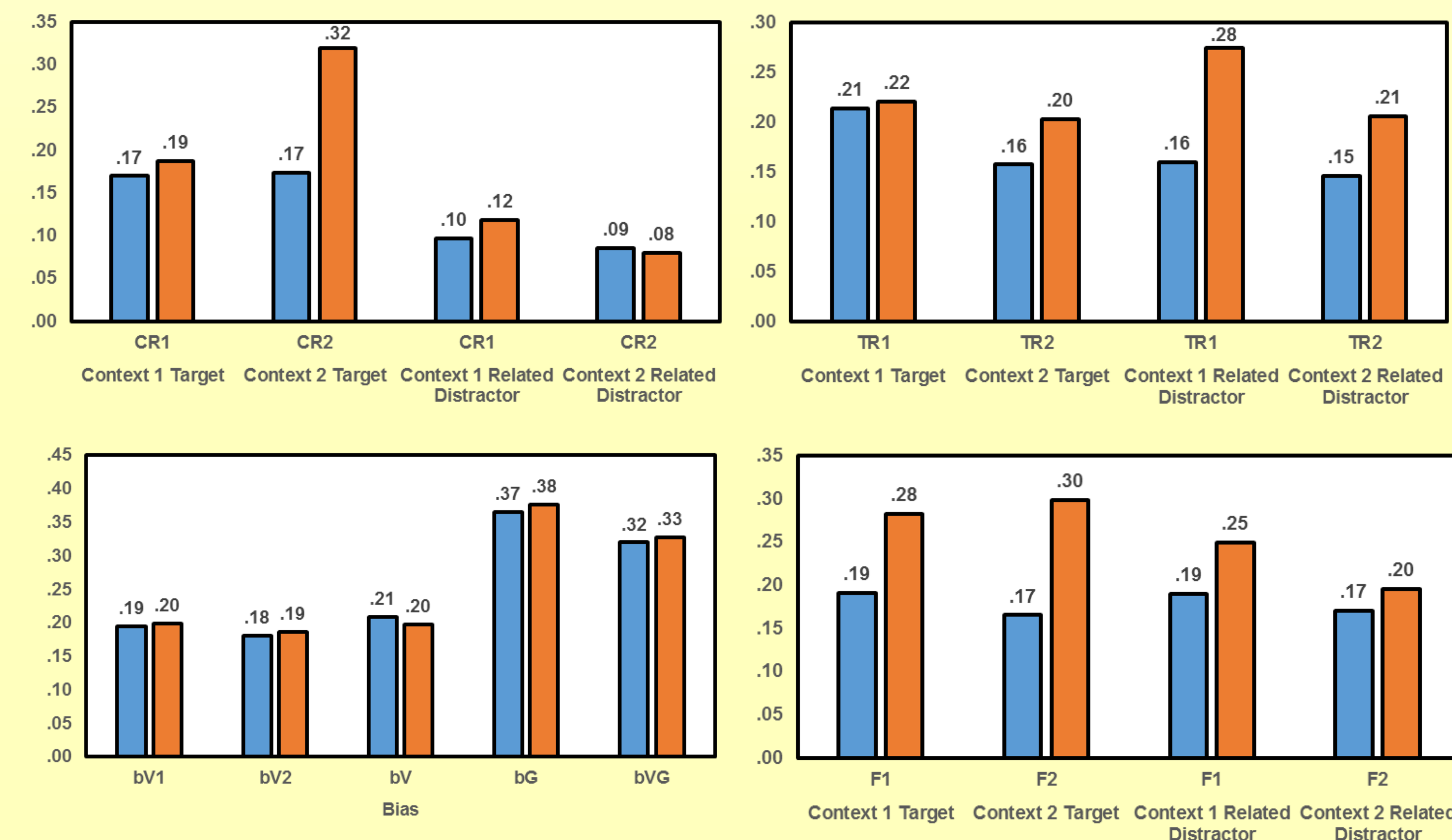


Results

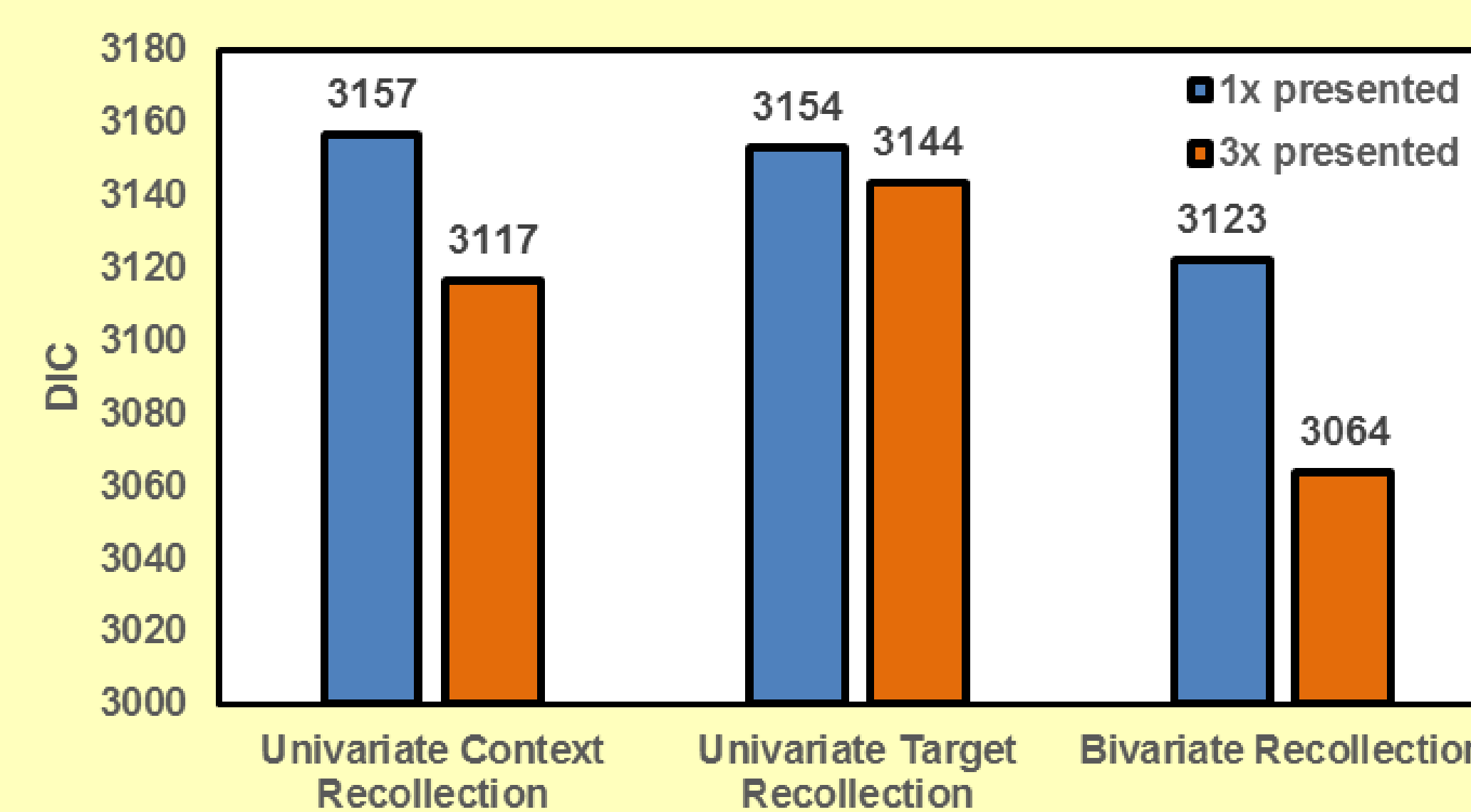
Acceptance probability in the V condition (standard old/new)

	1x presented	3x presented
Context 1 Target	.42	.46
Context 2 Target	.31	.51
Context 1 Related Distractor	.14	.13
Context 2 Related Distractor	.17	.11

Parameter estimates (mean of the posterior distribution) as a function of conditions



Deviance information criterion (DIC) – Model selection



Discussion

- A multinomial model that assumes bivariate recollection provided better descriptions of the data than multinomial models that assume univariate recollection
- True recognition increased as the # of presentations increased, while false recognition decreased
 - Process-level effect of repetition on true recognition: Repetition increased familiarity (and context recollection to a lesser extent)
 - Process-level effect of repetition on false recognition: Repetition increased target recollection
- List order (context 1 vs. 2): Familiarity and context recollection are relatively stable as a function of list order, but target recollection tends to decrease from the first to the last list.

References

- Brainerd, C. J., Gomes, C. F. A., & Moran, R. (2014). The two recollections. *Psychological Review*, 121, 563.
- Arndt, J. (2012). The influence of forward and backward associative strength on false recognition. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 38, 747.