

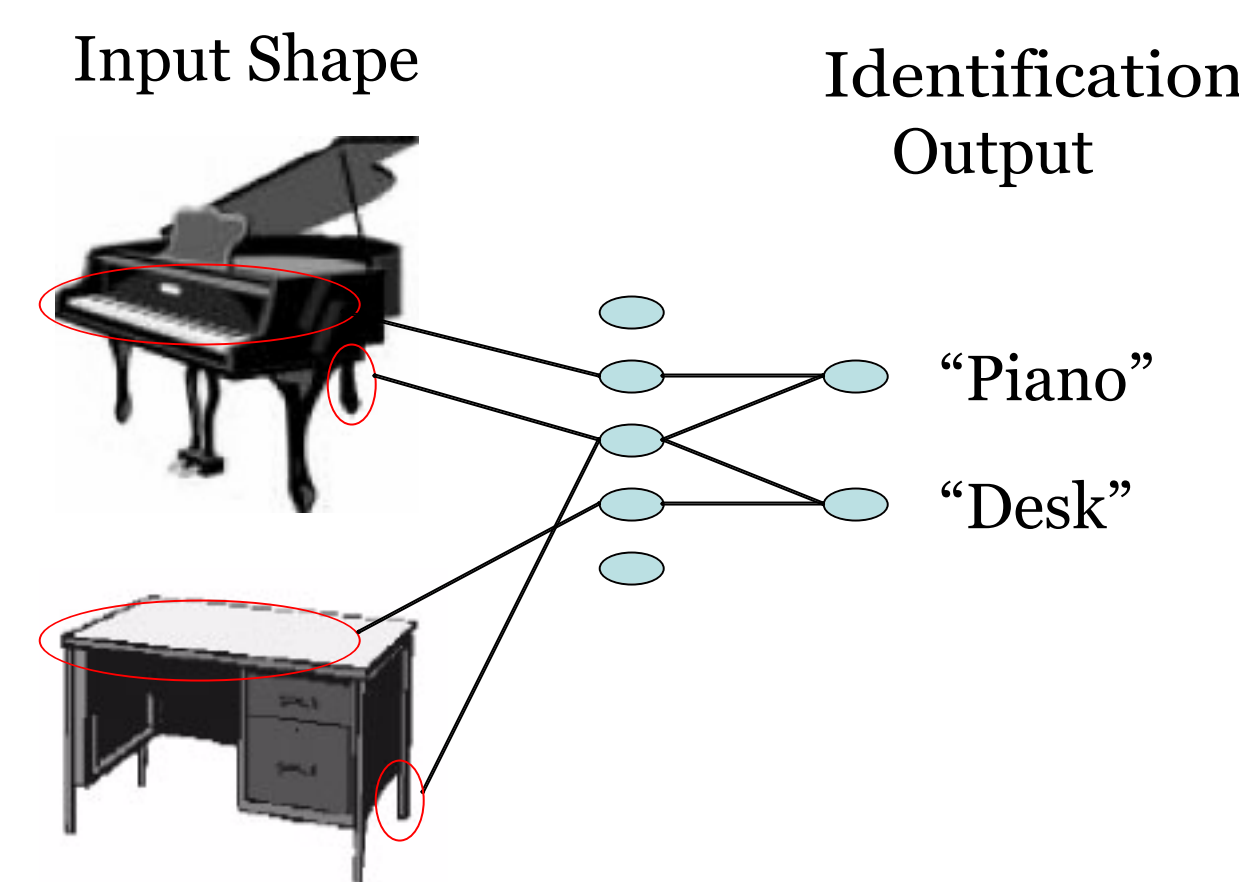
# WORD-TO-OBJECT ANTI-PRIMING: ARE VISUAL WORD AND VISUAL OBJECT REPRESENTATIONS FUNCTIONALLY SUPERIMPOSED?

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## INTRODUCTION

**VISUAL OBJECT REPRESENTATIONS ARE SUPERIMPOSED, HELPING CAUSE OBJECT-TO-OBJECT ANTI-PRIMING**

Visual representations of different objects may be superimposed on overlapping sets of synapses (e.g., vertical leg of a piano and of a desk represented by the same node). (Haxby et al., 2001; Tanaka, 1993)



When a familiar object (e.g., a piano) is identified, small synaptic changes may serve to strengthen its visual representation (e.g., measurable as piano-to-piano repetition priming). (See Marsolek, 2003)

However, such changes also should interfere with storage of any other familiar object (e.g., a desk) with which it is superimposed (e.g., measurable as piano-to-desk *anti-priming*).

### OBJECT-TO-OBJECT ANTI-PRIMING:

- Young Adults (Marsolek, Deason, & Westerberg, 2004)
- Amnesic patients (See Poster D187)
- Aged-matched controls (See Poster D187)
- Neural network modeling (Marsolek et al, submitted)

## MAIN QUESTION

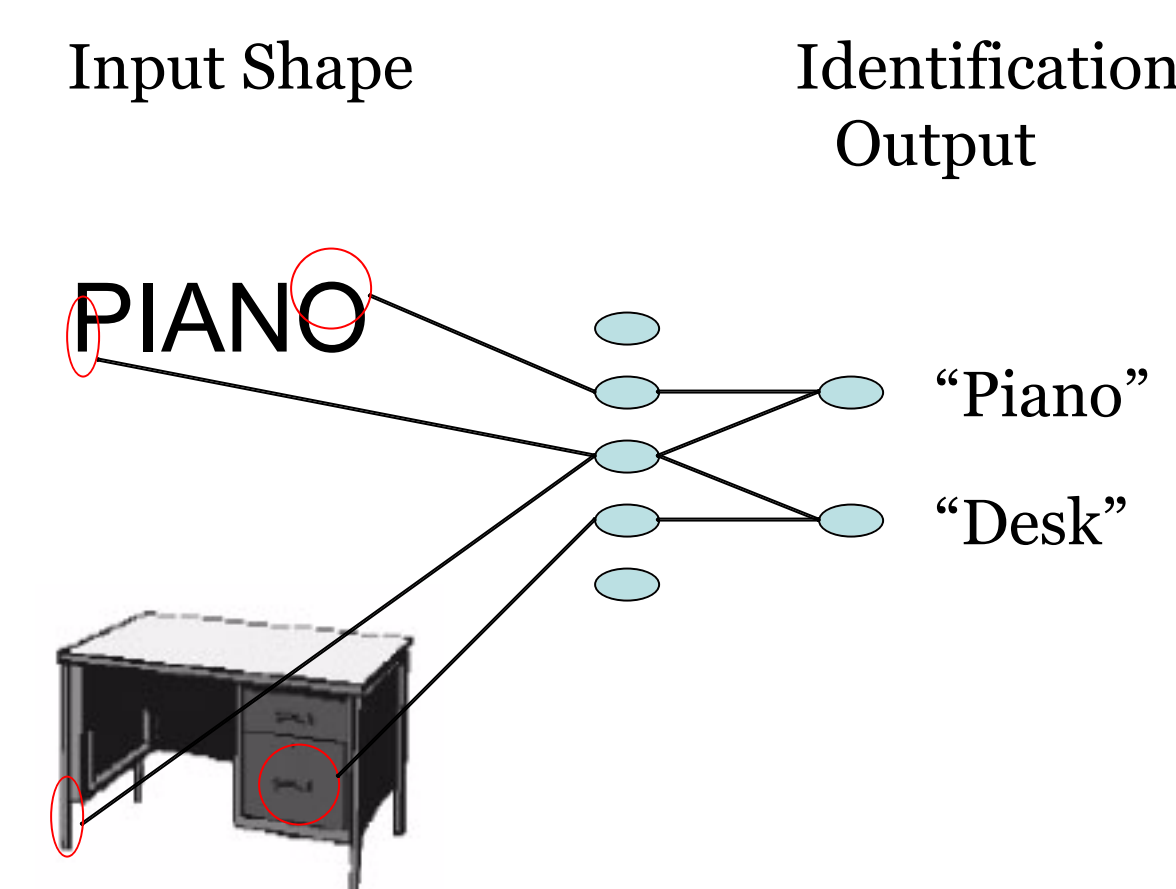
**ARE VISUAL WORD FORM AND VISUAL OBJECT FORM REPRESENTATIONS SIMILARLY SUPERIMPOSED?**

NO, if specialized visual word form area in mid-fusiform of left hemisphere (Cohen et al., 2000, 2002).

Visual Word Form Representations

Visual Object Form Representations

YES, if putative visual word form area also contributes to visual object form representations (Price & Devlin, 2003).



## METHOD

1. AUDITORY ENCODING

"FROG"

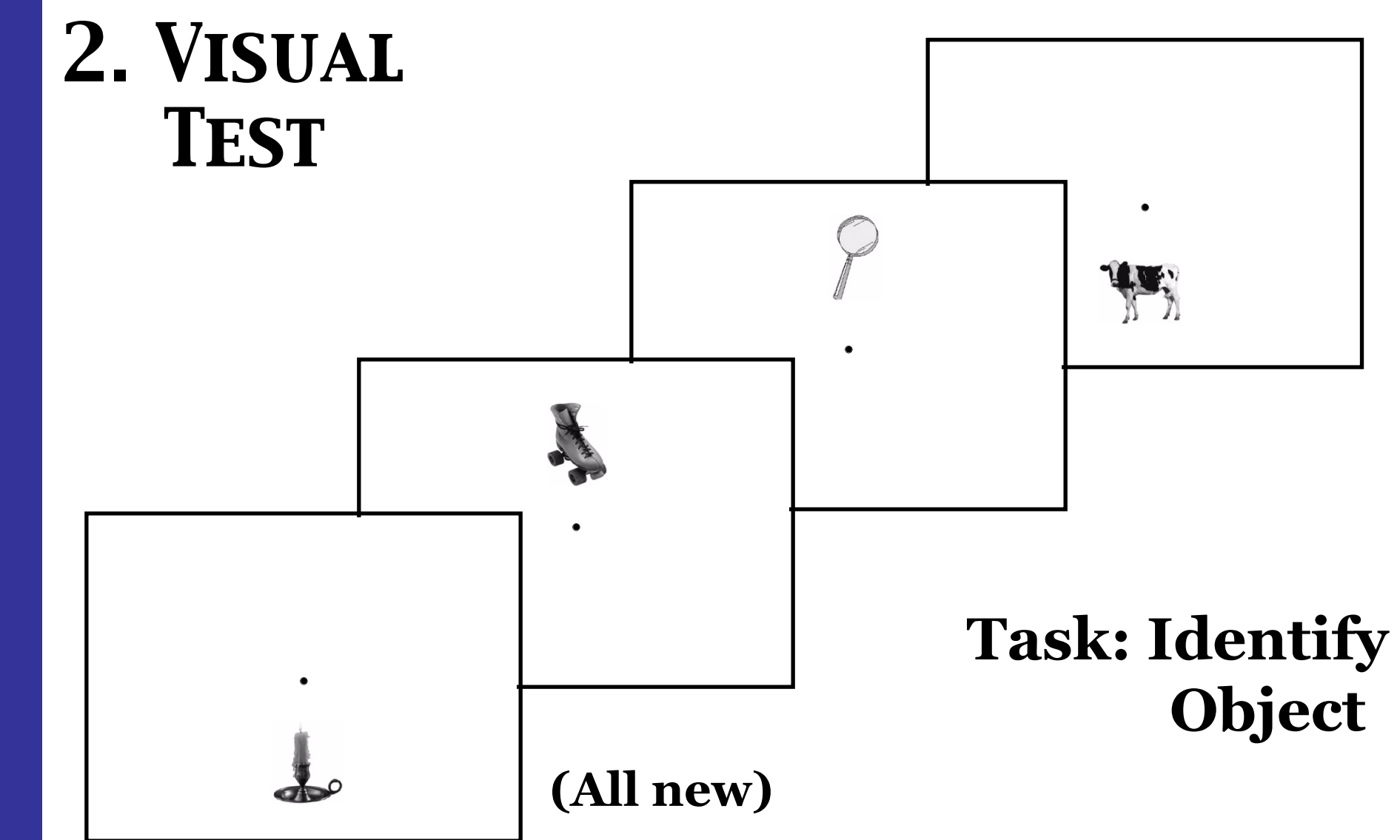
"CALCULATOR"

"DART"

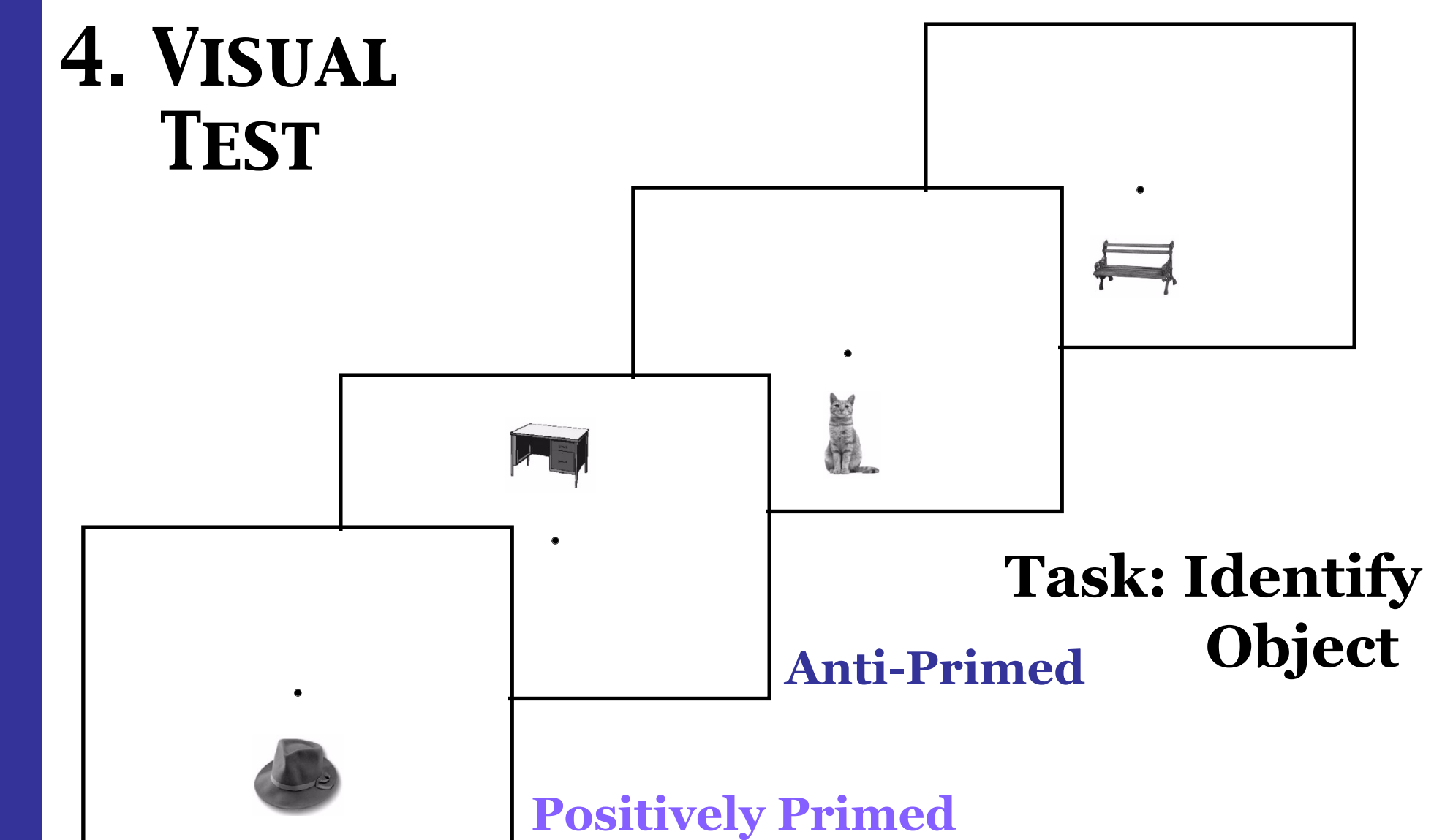
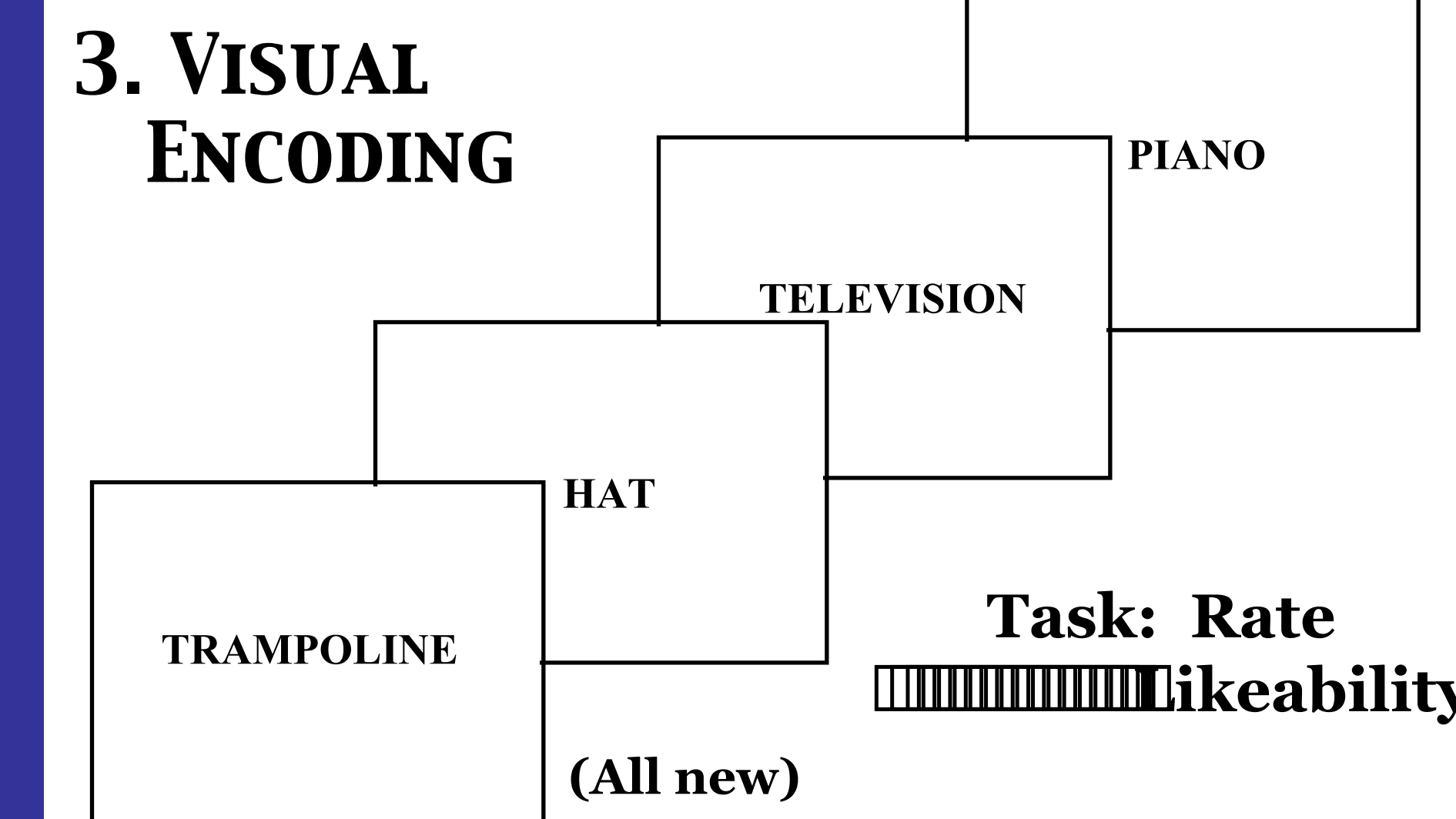
"BANANA"

Task: Rate

Likeability



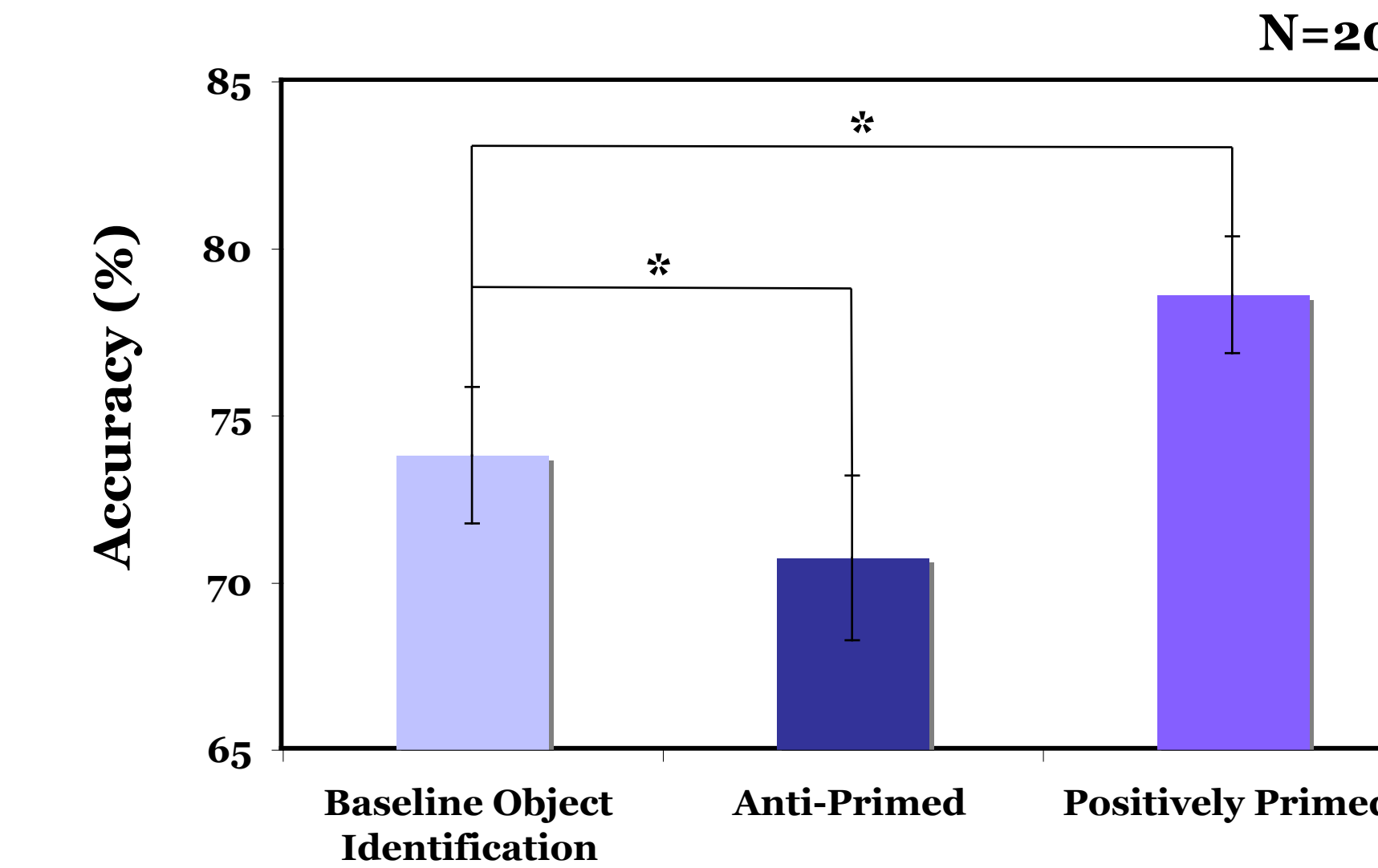
Provides *Baseline Object Identification* performance



*Positive Priming* is measured

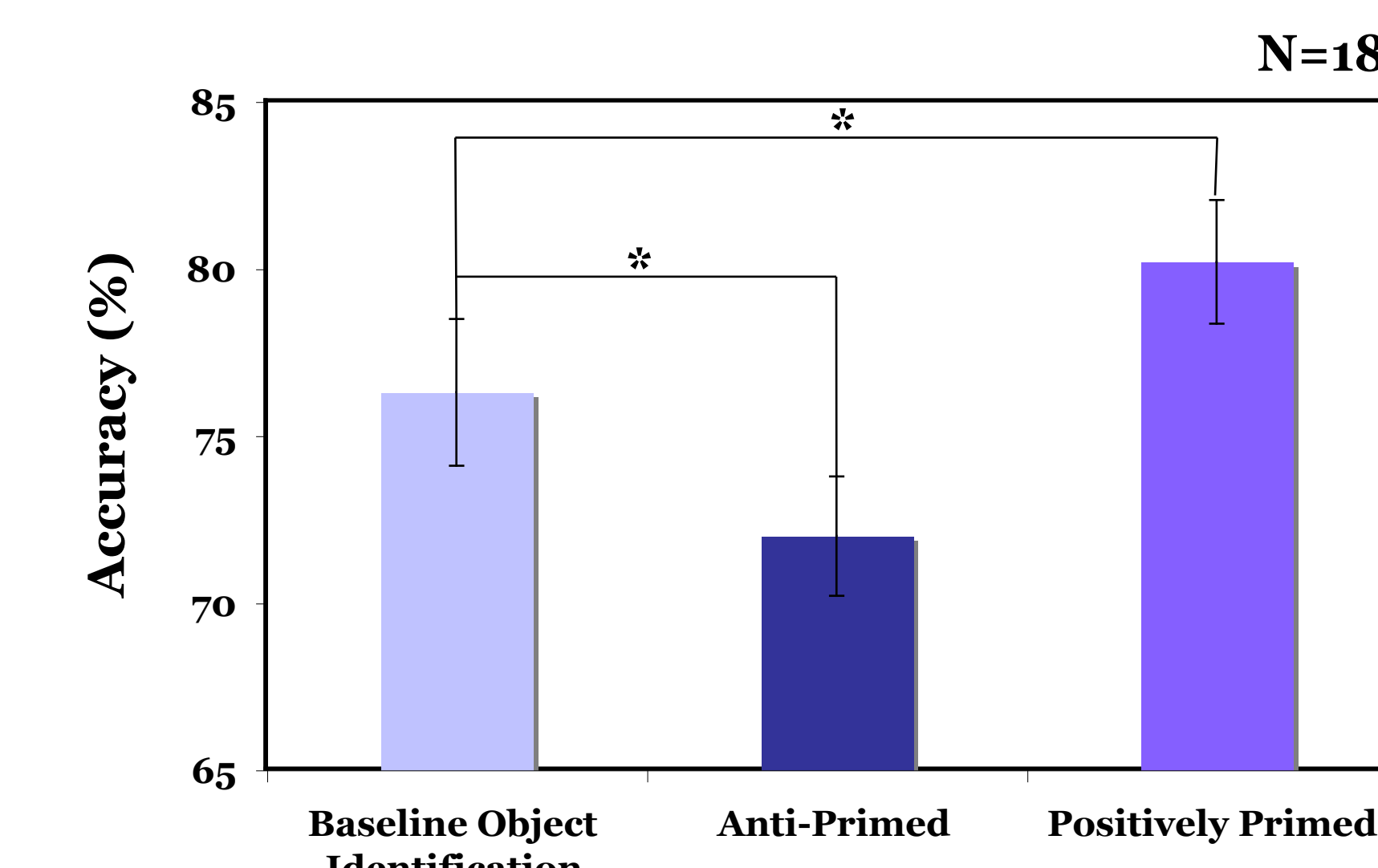
*Anti-Priming* is measured

## RESULTS



- Significant anti-priming and positive priming observed.

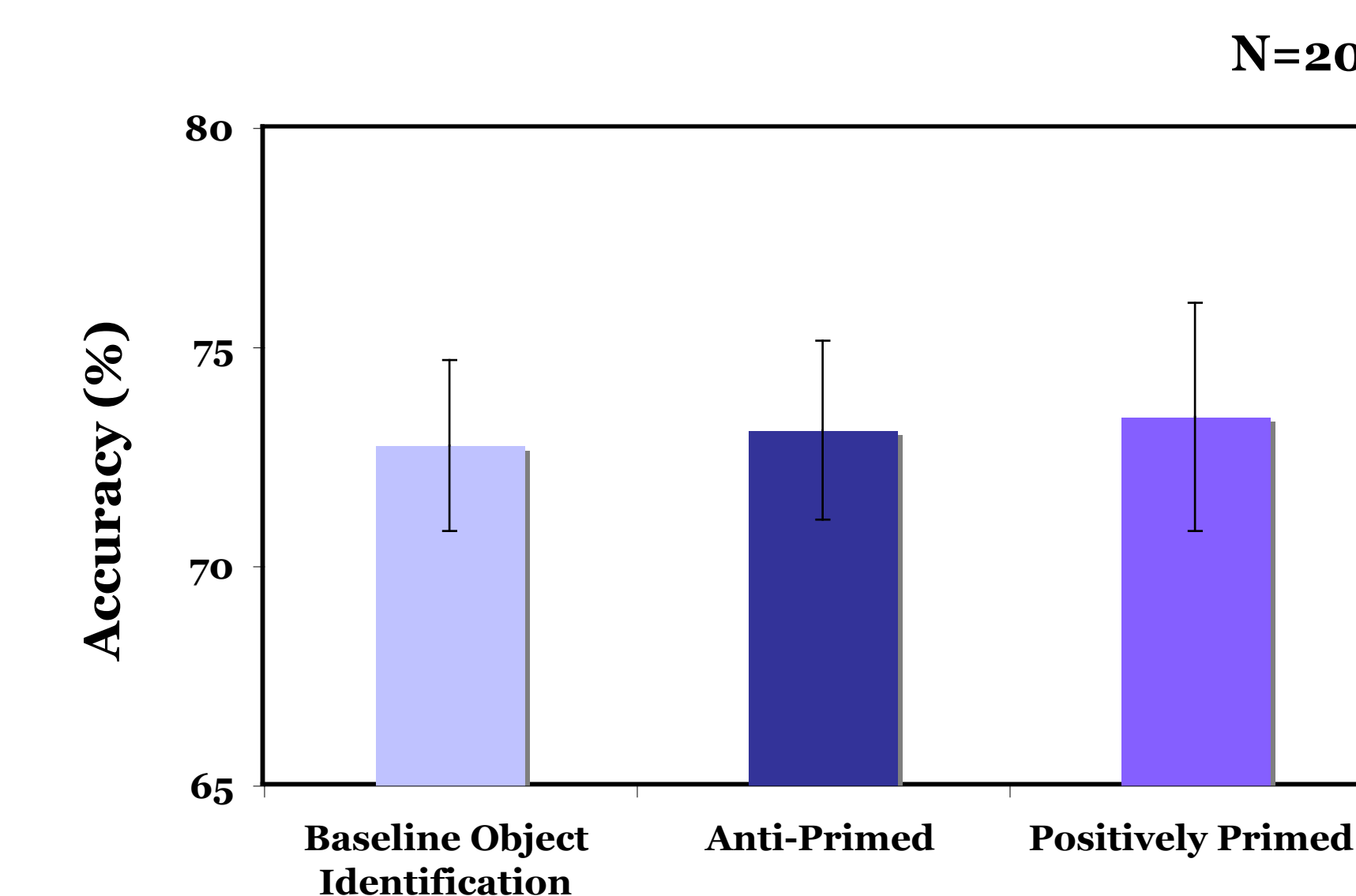
REPLICATE WITH DIFFERENT SET OF SUBJECTS?



- Significant anti-priming and positive priming observed.

DOES WORD-TO-OBJECT ANTI-PRIMING REQUIRE VISUAL WORD FORMS?

- Tested with an *Auditory Phase 3*



- No significant anti-priming observed.

## CONCLUSIONS

- Significant visual word-form to visual object-form anti-priming observed.
- Functional evidence against specialized visual word form processing.
- Functional support for superimposition of visual word form and visual object form representations.

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