Can shape information be transferred from hand to eye independently of semantics?

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AIM

Tease apart the contributions of ***cross-modal shape*** from semantic labels in haptic-to-vision priming of familiar objects.

	FAMILIAR OBJECTS
No semantic confound	✓
Ecologically valid	✓

BACKGROUND

- Information acquired through touch can facilitate visual processing.
  (e.g. touching one earring while looking for the lost other)
- Visual and tactile object perception largely rely on the extraction of shape information.
- Two different approaches to the study of shape priming in visual-haptic literature:

	FAMILIAR OBJECTS	UNFAMILIAR OBJECTS
		
No semantic confound	✗	✓
Ecological validity	✓	✗

(familiar objects, e.g.: Reales & Ballesteros, 1999; unfamiliar objects, e.g.: Easton et al., 2007; Ostrovsky et al., 2011)

METHODS

Stimuli: Objects of 8 semantic categories, with 2 differently shaped exemplars each.

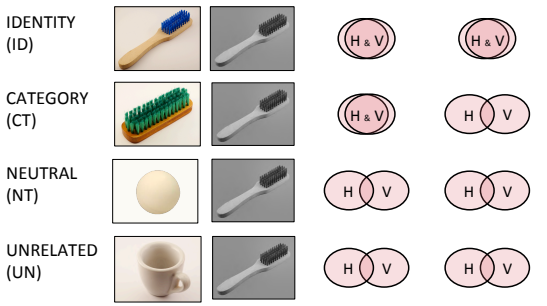
Procedure: Haptic-to-Vision priming

HAPTIC CUE
Free bimanual exploration

VISUAL TARGET
De-blurring sequence (7 s.)

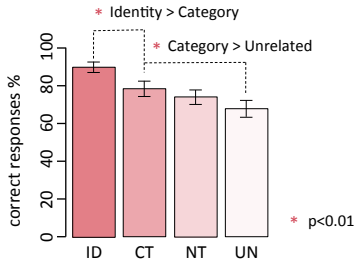
⇨ TASK: Name the visual object being revealed

Experimental conditions:
Adapted from Biederman & Cooper (1991)



RESULTS

Accuracy of visual target identification (n=16)



SHAPE PRIMING
shared semantic label + shape= ↗↗ accuracy

SEMANTIC PRIMING
shared semantic label = ↗ accuracy

Priming was NOT a response bias from the held object:

- when the haptic prime was a potential target
  59% haptic label responses < 67% optimal guessing
- when the haptic prime was target unrelated
  7.8% haptic label responses < 12.5% chance level

DISCUSSION

Haptic-to-vision priming for familiar objects occurs by ***transfer of cross-modal shape***, over and above semantic priming.

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