Can shape information be transferred from hand to eye independently of semantics?
A. Pesquita 1, A. A. Brennan 1, J. T. Enns 1, S. Soto-Faraco2,3
1University of British Columbia 2Universitat Pompeu Fabra 3Institut Català de Recerca i Estudis Avançats, ICREA

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:

<table>
<thead>
<tr>
<th>FAMILIAR OBJECTS</th>
<th>UNFAMILIAR OBJECTS</th>
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</thead>
<tbody>
<tr>
<td>No semantic confound</td>
<td>✓</td>
</tr>
<tr>
<td>Ecological validity</td>
<td>✓</td>
</tr>
</tbody>
</table>

(related 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.)

Experimental conditions:
Adapted from Biederman & Cooper (1991)

Stimuli congruency

<table>
<thead>
<tr>
<th>Stimuli congruency</th>
<th>Manipulation</th>
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<tbody>
<tr>
<td>HAPTIC CUE (H)</td>
<td>SEMANTIC LABEL</td>
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<tr>
<td>VISUAL TARGET (V)</td>
<td>SHAPE INFORMATION</td>
</tr>
<tr>
<td>IDENTITY (ID)</td>
<td></td>
</tr>
<tr>
<td>CATEGORY (CT)</td>
<td></td>
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<tr>
<td>NEUTRAL (NT)</td>
<td></td>
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<td>UNRELATED (UN)</td>
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</tbody>
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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.

REFERENCES:

Contact: anapesquita@psych.ubc.ca