



Adaptation for perception of the human body: investigations of transfer across viewpoint and pose

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INTRODUCTION: Faces are important for social interactions, but bodies can also play a role in recognition of identity and emotional state. Face representations have been extensively explored with adaptation paradigms.

QUESTION:

- Are there aftereffects for body perception?
- If so, do they show viewpoint invariance?
- How about invariance for pose? Bodies can be distorted in ways impossible for faces – a good test of structural invariance of object representations!

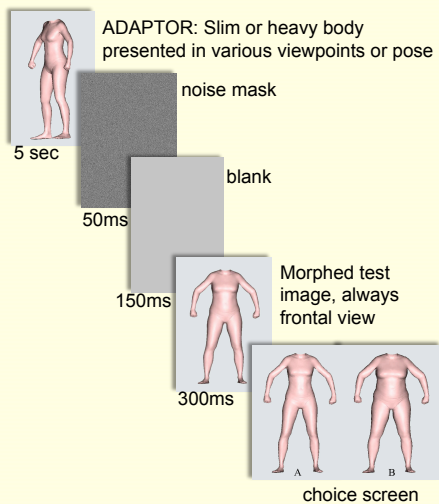


Figure 1. TRIAL SEQUENCE:
1 male and 1 female version
Subjects respond whether an ambiguous morphed test image looks more like body A or body B on the choice screen

EXPERIMENT 1: VIEWPOINT INVARIANCE

- 13 subjects
- different viewpoints of rotation (clockwise, counterclockwise) of an upright headless slim or heavy body were used for adapting images.
- test and choice-screen stimuli show frontal view images.
- 0° condition corresponds to 'same-view' adaptation

RESULTS:

Significant aftereffects found for all views except 30°
ANOVA: no main effect of viewpoint ($F_{(4,12)} = 0.49, p = 0.73$)

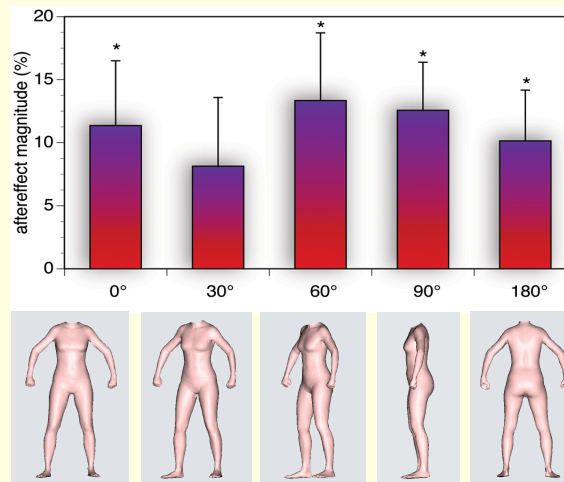


Figure 2. RESULTS, EXPERIMENT 1:
Examples of viewpoints of adapting images and their aftereffect magnitudes shown above each.

EXPERIMENT 2: POSE INVARIANCE

- 15 subjects
- Frontal (same-view) bodies as well as different poses used as adapting images.
- test and choice screen stimuli again show frontal view images, identical to Experiment 1.

RESULTS:

Significant aftereffects replicated for same full-frontal pose.
Aftereffect found for pose 1 but not pose 2
ANOVA: main effect of pose
($F_{(2,14)} = 8.01, p < 0.002$)

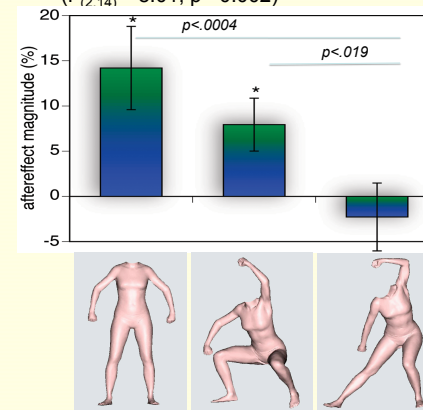


Figure 3. RESULTS, EXPERIMENT 2:
Examples of poses of adapting images and their aftereffect magnitudes.

CONCLUSIONS:

- Body aftereffects exist and show no decline over changes in viewpoint – fully viewpoint invariant. This contrasts with face aftereffects in other studies, which show a significant decline with changes in viewpoint.
- Body aftereffects show partial transfer across some but not all changes in pose. This indicates significant limitations in the structural invariance of body representations.