



# Facial Age Aftereffects Show Partial Identity Invariance and Transfer From Hands to Faces

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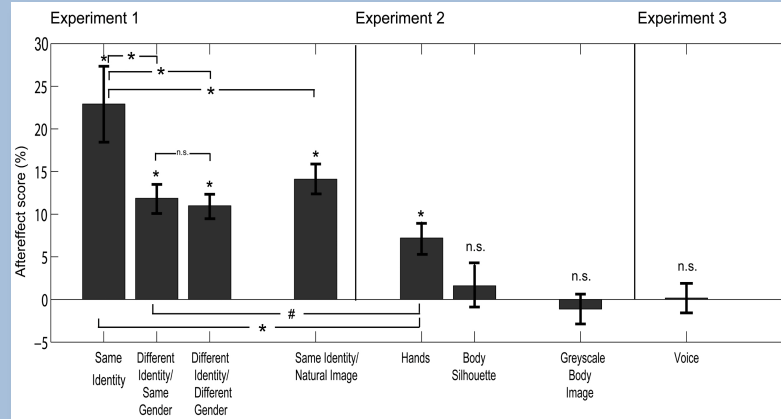


## Introduction

- Adaptation has long been used to probe the nature of visual representations, including more recently, of complex objects such as faces.
- It can occur for different types of facial properties, such as identity, expression, gender ethnicity.
- For the short-term dynamic property of expression, we have shown that this:
  - a) has identity-dependent and identity-invariant components,
  - b) only weakly transfers from non-face visual stimuli,
  - c) shows no cross-modal transfer from sound .

QUESTION: What about the long-term dynamic of age?

## Results



## Summary

### Experiment 1:

- Significant age aftereffects in all conditions
- Also occur when natural images used as test stimuli
- Aftereffects are reduced when identity differs between adaptor and test stimulus.

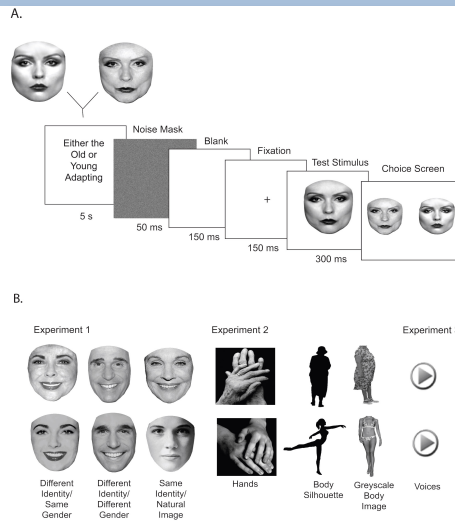
### Experiment 2 (cross-stimulus):

- Facial age aftereffects can be induced by perceiving hands
- No transfer of adaptation from body silhouettes and greyscale bodies to faces.

### Experiment 3:

- No cross-modal transfer from voices to hands

## Material and Methods



**Subjects:** 48 participants total

### Trial – perceptual bias technique:

- 5 sec Adapting Stimulus – young v. old

• 300ms Test Stimulus:

a morph between a young and old face (except for Exp 1d, which used natural mid-life images)

• Choice Screen: young face or old face

Compute face after-effect magnitude as difference in responses with young adaptor vs old adaptor.

### Experiment 1 (adaptors = faces):

- a) same-identity faces
- b) different-identity/same-gender faces
- c) different-identity/different-gender faces
- d) same-identity/natural-image faces

### Experiment 2 (visual cross-stimulus):

adaptors = non-face visual stimuli

- a) hands
- b) body silhouettes
- c) greyscale bodies

### Experiment 3 (cross-modal):

auditory adaptors = young and old voices

## Conclusion

- Confirm that adaptation for facial age occurs.
- As for expression, age aftereffects have both identity-invariant and identity-dependent components (Fox & Barton, 2007).
- There is **modest inter-stimulus transfer** of adaptation from hands to faces. We reported weak transfer for **expression** from dog images (Fox & Barton, 2007). Others reported transfer for **gender** from bodies (Ghuman et al, 2010) but not from hands (Kovacs et al, 2006).
- There is **no cross-modal adaptation** from auditory to visual stimuli. This is similar to lack of cross-modal transfer for expression (Fox & Barton, 2007) or gender (Kloth et al, 2010). However, there is some evidence for asymmetric cross-modal influences, with faces generating aftereffects in voices (Zaske et al, 2010).