

**Information about composite face stimuli (Caucasian faces). Talia Retter & Bruno Rossion, October 2013**

**File Names:**

e.g,

A\_01\_02\_F\_b

1st part - A or R, for Aligned or Right-misaligned

2nd part - the identity of the top face part (identities range from 01-15, with no significance towards identity similarity)

3rd part - the identity of the bottom face part

4th part - F or M, for Female or Male

5th part - if there is a "b", it means this image is saved at a size 5% larger than the original

**How To Use the Stimuli:**

In a target-probe pair, a target stimulus is displayed quickly followed by a probe stimulus.

The probe may be presented at a size 5% larger - recommended to control for matching based on low-level properties.

Target-probe pairs are selected for matching sex and alignment, so that:

- a female target is always followed by a female probe (and male target by male probe)

- an aligned target is always followed by an aligned probe (and misaligned target by misaligned probe)

Participants are instructed to report whether the identity of the TOP PART of the probe is the same identity as that of the target.

Accuracy and reaction times are recorded.

There are six conditions in a basic composite experiment:

1. same-----aligned
2. composite---aligned
3. different---aligned
4. same-----misaligned
5. composite---misaligned
6. different---misaligned

For "same" conditions, both the top and bottom part of the target stimulus are the same identity as the probe.

e.g., target A\_02\_04\_F -> probe A\_02\_04\_F\_b

For "different" conditions, both the top and bottom part of the target stimulus are different identities than the probe.

e.g., target R\_14\_12\_M -> probe R\_09\_10\_M\_b

For "composite" conditions, the top part of the probe is the same identity as the target, but the bottom part of the probe is a different identity than the target

e.g., target A\_05\_07\_F -> A\_05\_08\_F\_b

A basic measure of the composite effect can be found by calculating:

- Accuracy(same-aligned) - Accuracy(composite-aligned)  
- [ResponseTime(composite-aligned) - ResponseTime(same-aligned)] / ResponseTime(same-aligned)  
\* 100

For details see:

Rossion, B. (2013). The composite face illusion: a whole window into our understanding of holistic face perception. *Visual Cognition*, 21, 139-253.

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### **The Making of the Composite Stimuli**

1. Started with jpg face photographs: cleaned (removed moles, marks, etc.), horizontally aligned by the eyes, cropped - no external features, in color, saved at a height of 600pi
  2. Used a MATLAB script to create a 3 pixel gap between top and bottom face parts - the gap was created 5% of the length of the face above the nostrils
  3. Made 10 sets of five stimuli for each identity : the top face part of the identity was paired with the original bottom part and with four other bottom parts
  4. Kept the original face and used it as a template to:
    - a. For each non-original bottom part, pasted the bottom part onto the template of the original and, keeping the height-width proportions locked, resized the bottom part so that the width matches that of the original top part\*
    - b. Then, align the nose of the bottom part with the top, using free transform (keeping proportions locked), and then using the patch, paint, etc. tools to smooth the appearance
    - c. By visual inspection, match the greyscale luminosity of the bottom part so that it appears to match that of the top part

note: this was not done automatically so that the luminosities around the connection of the face parts appeared to match, to create the least manipulated appearance possible
  5. Made right misaligned versions of all these stimuli, centering the bottom part at 25% of the width of the top part to the right
  6. Converted each image to greyscale
  7. Resized the images to 50% of the original size (to about 300 pixels in height, varying depending on the height of the new bottom parts)
  8. Trimmed the top and bottom canvas to the face, then resized the canvas to 325 pixels by extending the bottom of the canvas
- (\*) For Exaggerated Composite stimuli only, the bottom parts were resized parametrically (so that the bottom face parts varied in height in steps of 10 pixels (full image 600pi).

Note: this distortion increased the difference of bottom parts, as so is expected to produce a larger composite effect