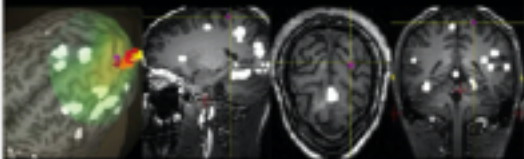**FIGURE 9.3** Examples of stimuli, fMRI statistical maps, and time series, from several assays of response properties of the FFA. The contrast illustrated in panels **1A** and **2A** (faces > objects) was used to define the FFA ROI, outlined in green in the axial images, each for a different individual subject. Panels **B** and **C** illustrate the statistical map generated by each of the contrasts, each for the same subject, with the green-outlined ROI from panel **A** superimposed. This procedure was repeated on the individual-subject data of five subjects, and each time series is the average from the FFA ROI of each. Source: Kanwisher, McDermott, and Chun, 1997. Reproduced with permission of the Society of Neuroscience.

fMRI Methodology

The Problem of Multiple Comparisons

- Kanwisher's work was able to get around the problem of multiple comparisons by using an approach in which, instead of doing an exhaustive number of comparisons involving the activity of individual voxels (start with the first voxel, compare it to every other voxel, then repeat that process again for each voxel) she averaged the activity of many voxels which overlapped with the region of space in which the FFA was located to produce a singular signal

- e.g. Comparison 1A is looking at whether the **region of interest** (**ROI**, in this case the FFA) is more active when looking at faces, as compared to objects
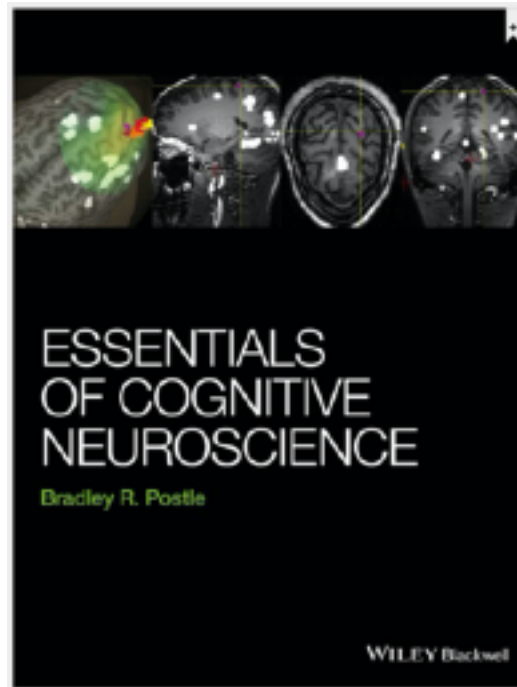
ESSENTIALS OF COGNITIVE NEUROSCIENCE

Bradley R. Postle

METHODOLOGY BOX

9.2 Some problems, and solutions, with univariate analyses of fMRI data

fMRI Methodology
The Problem of Multiple Comparisons

METHODOLOGY BOX

9.2 Some problems, and solutions, with univariate analyses of fMRI data

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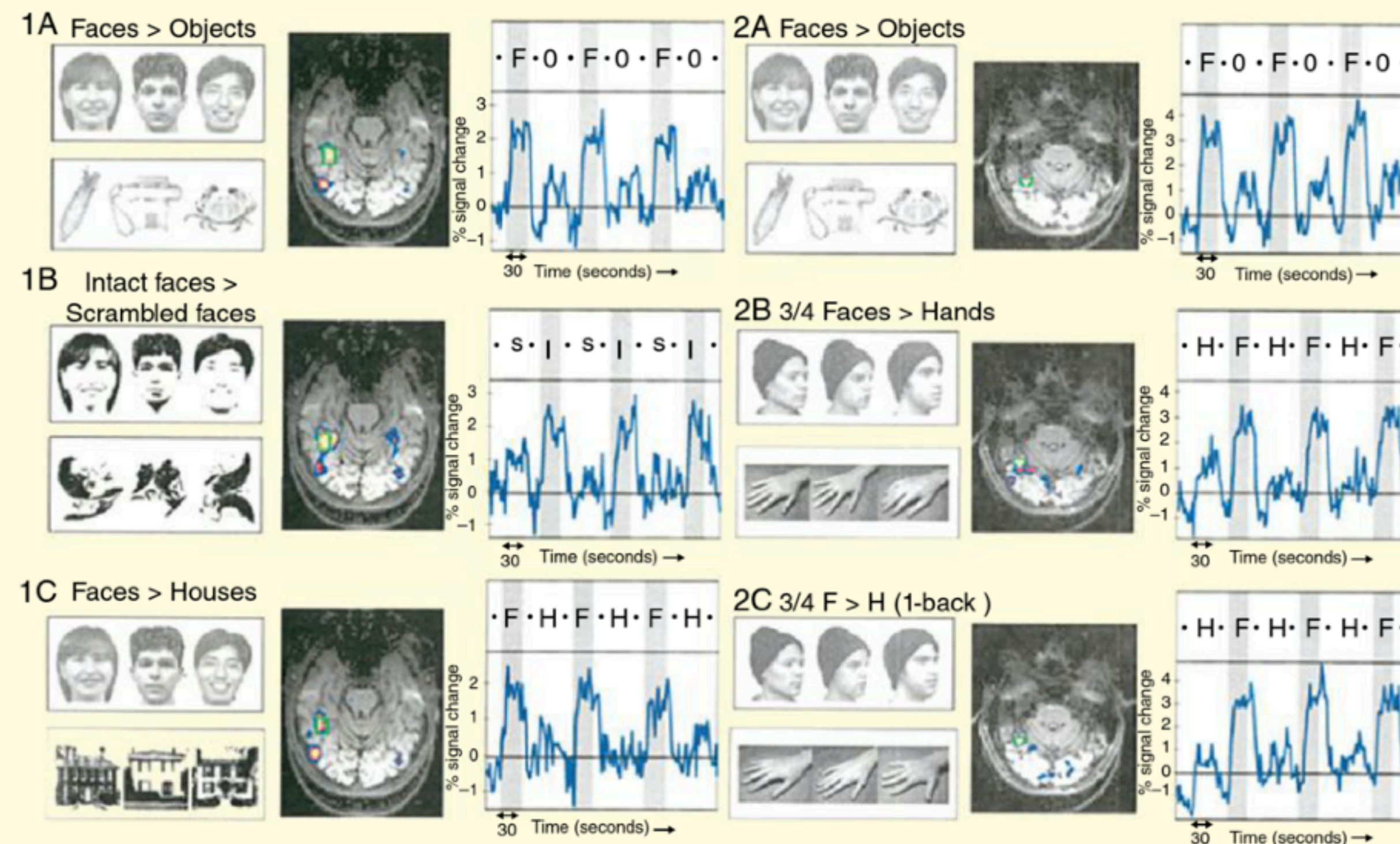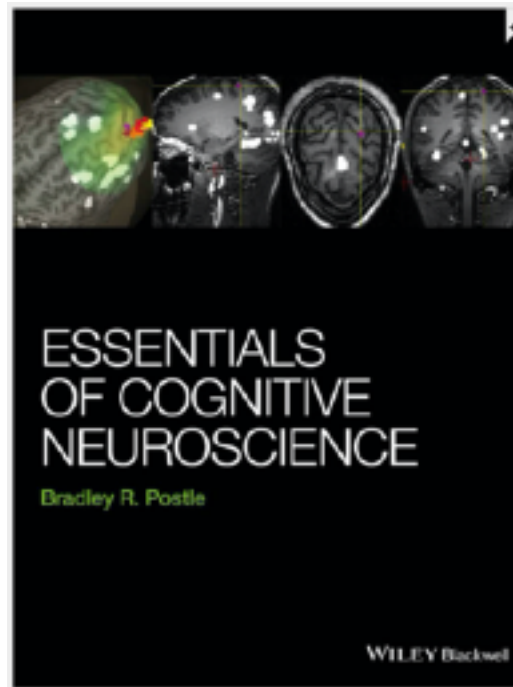
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FIGURE 9.3 Examples of stimuli, fMRI statistical maps, and time series, from several assays of response properties of the FFA. The contrast illustrated in panels **1A** and **2A** (faces > objects) was used to define the FFA ROI, outlined in green in the axial images, each for a different individual subject. Panels **B** and **C** illustrate the statistical map generated by each of the contrasts, each for the same subject, with the green-outlined ROI from panel **A** superimposed. This procedure was repeated on the individual-subject data of five subjects, and each time series is the average from the FFA ROI of each. Source: Kanwisher, McDermott, and Chun, 1997. Reproduced with permission of the Society of Neuroscience.

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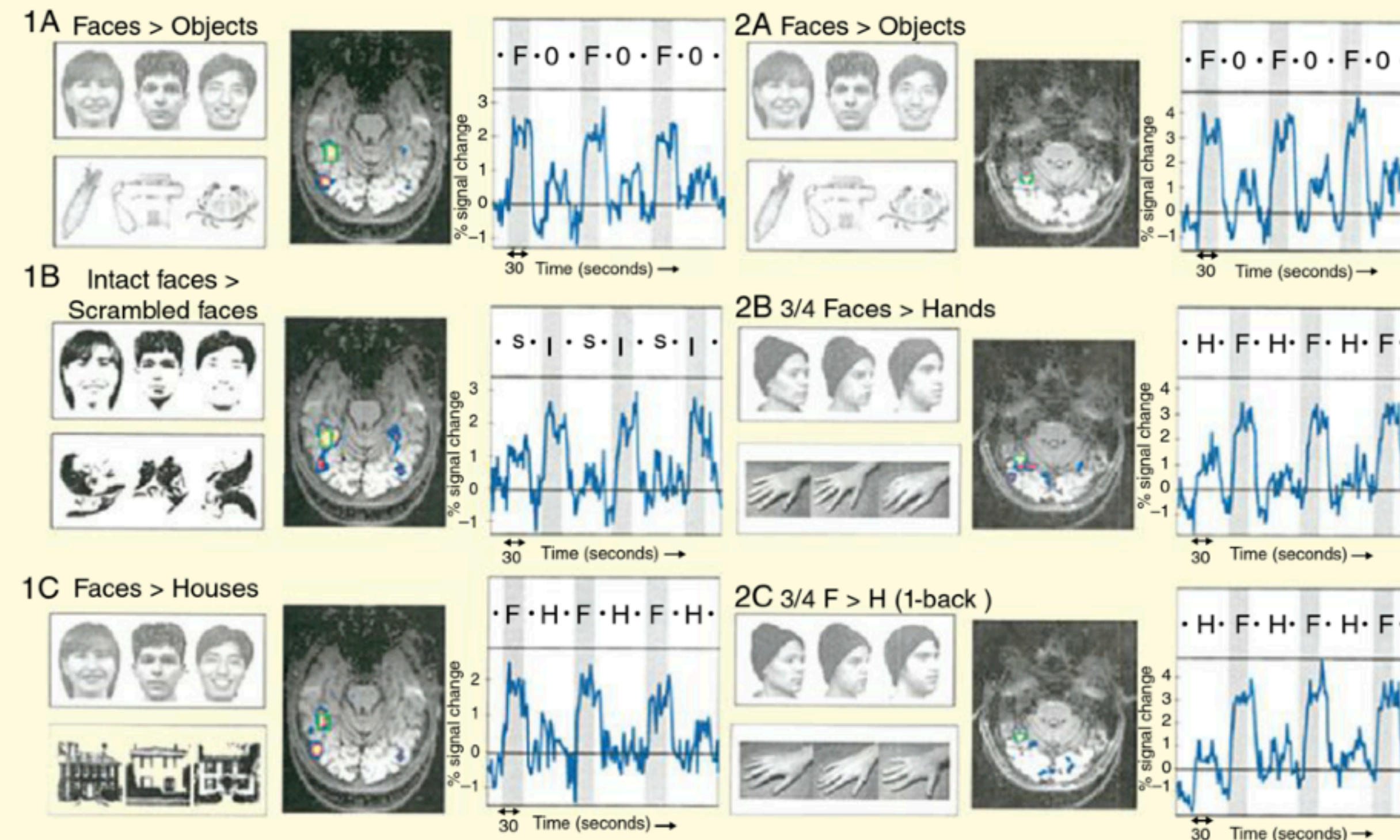
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"In Figure 8.11 A, in contrast, because the activity from the two voxels is averaged into one ROI, no correction needs to be applied, because only one test is being performed. Therefore, defining an ROI with one contrast, then "interrogating" it with either data from a different block, or a contrast that is mathematically orthogonal to the one used to define the ROI, is an effective and frequently used strategy."

(Postle, 2015)