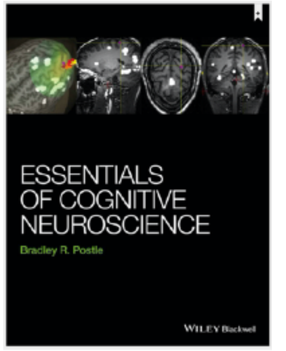
fMRI Methodology

Ruling Out Alternative Explanations

METHODOLOGY BOX

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



- The real difficulty with this logic is that we can't even get close to testing every other possible comparison we could think of (with every other kind of object that exists in the world)
- We therefore have to be practical and at some point say the balance of evidence is enough to support a claim like the FFA is specialized for responding to faces, without going overboard but with enough data to feel confident
  - e.g. the scientific community didn't test whether gravity stops working in every possible conceivable situation on earth before accepting it as a concept… rather, at some point, enough evidence was gathered to come to a consensus that it's a 'real thing', with reliable properties, that we can count on

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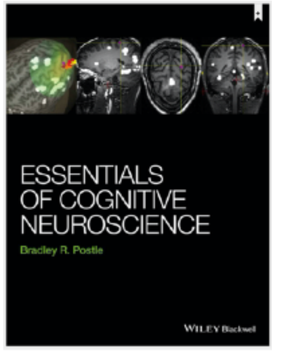

- So you can really never be absolutely certain any given region ONLY responds to one type of stimuli and never anything else but it's important to gather as much evidence as you can to at least minimize the possibility that there is some obvious alternative explanation (e.g. another kind of major category of objects that you didn't think to test)

- One way Kanwisher tried to be as thorough as possible here involved a very 'low-level' solution… simply bring the experimental participants back for multiple fMRI sessions so they could gather enough data, to rule out enough alternative explanations, to satisfy the scientific community that her argument was at least plausible (albeit not an absolute certainty)