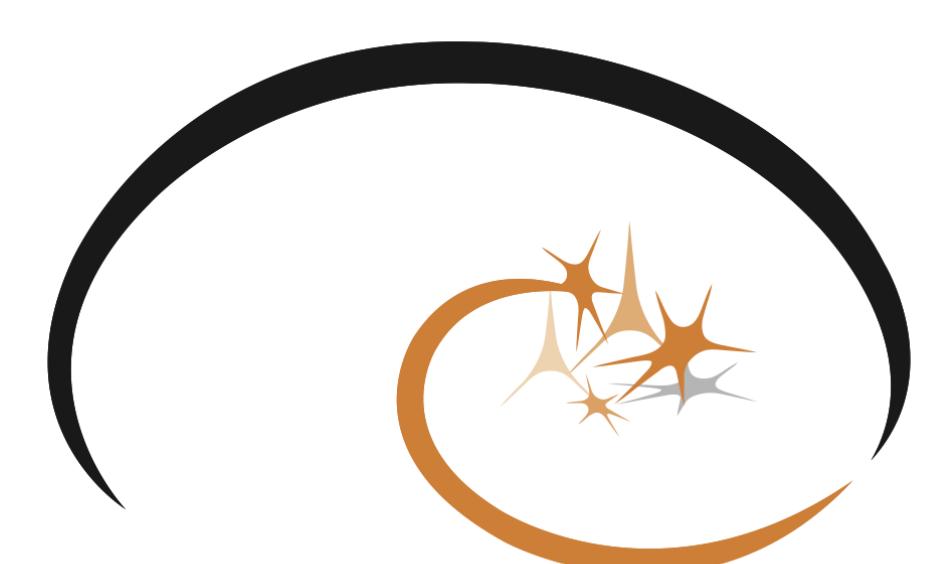




What you find depends on how you look: Category selectivity in frontal cortex revealed by full correlation matrix analysis

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Introduction

Focus on activation in fMRI belies distributed nature of cognition and dynamic interactivity of brain

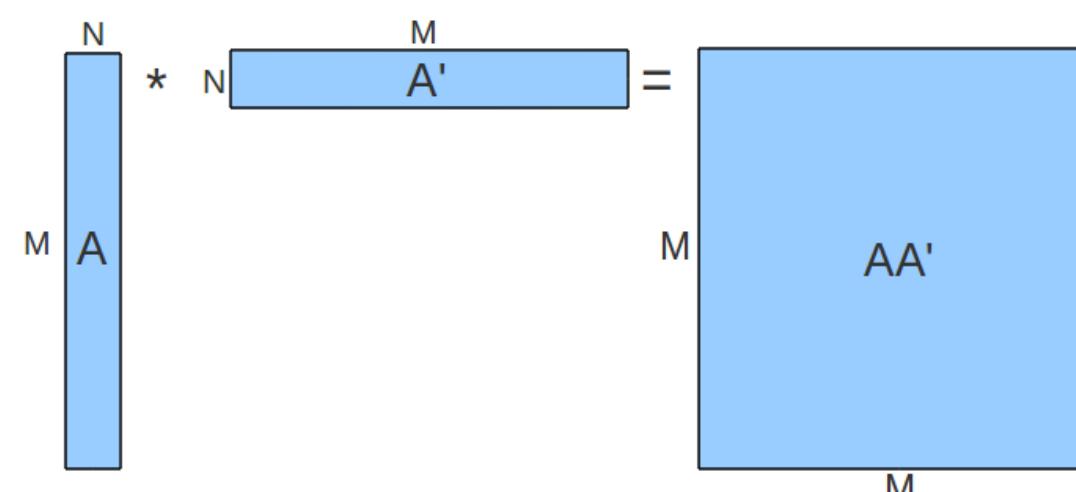
Consider a brain region that is always active, but interacts differently with other brain regions depending on condition

Existing approaches for functional connectivity require defining seeds based on activity

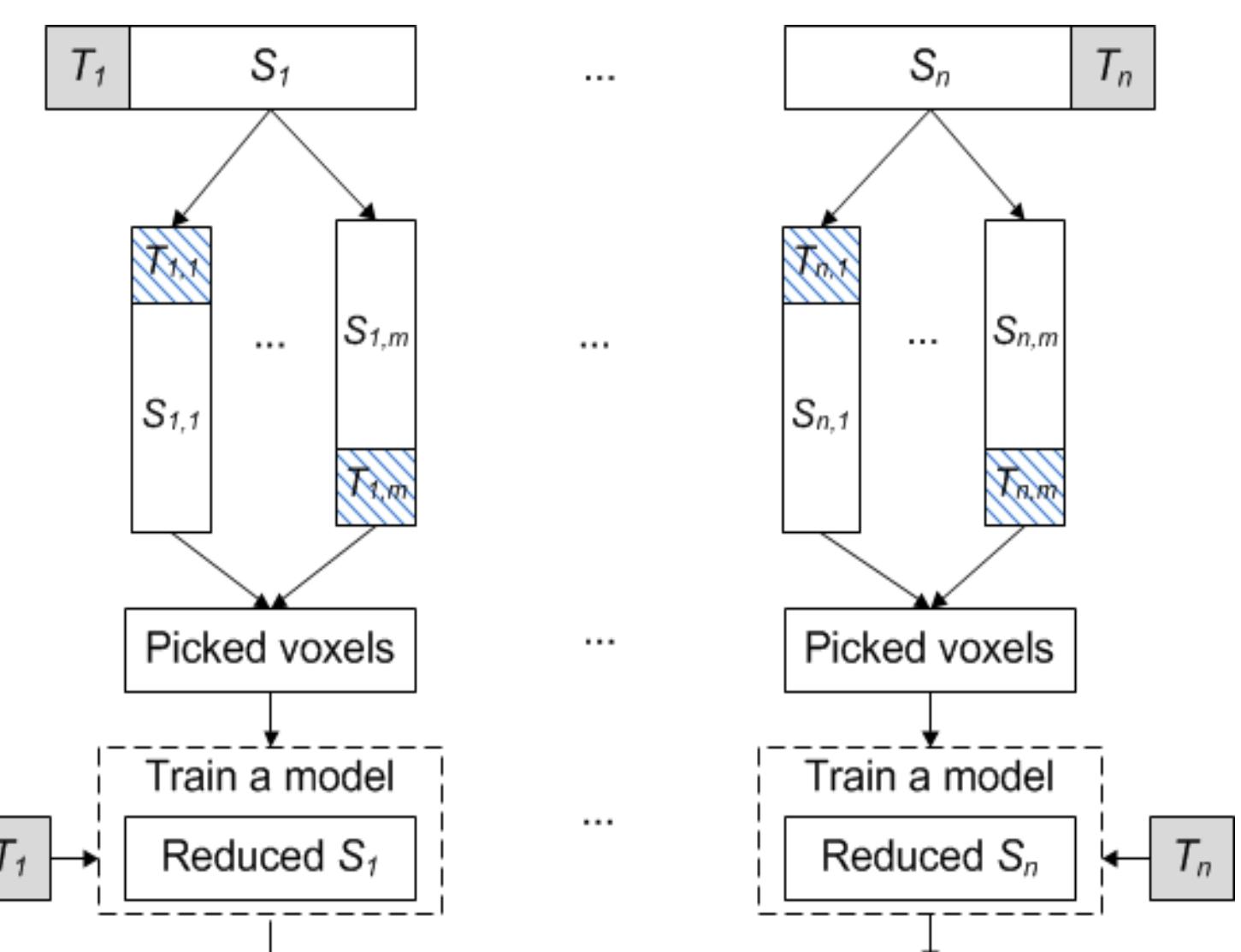
What can an exhaustive, unbiased analysis of correlations tell us about category-selective object perception?

Method

Step 1: Compute full pairwise correlation matrix over whole brain for every trial/block



Step 2: Define training sets ($N-1$ subjects) and test sets (N^{th} subject)



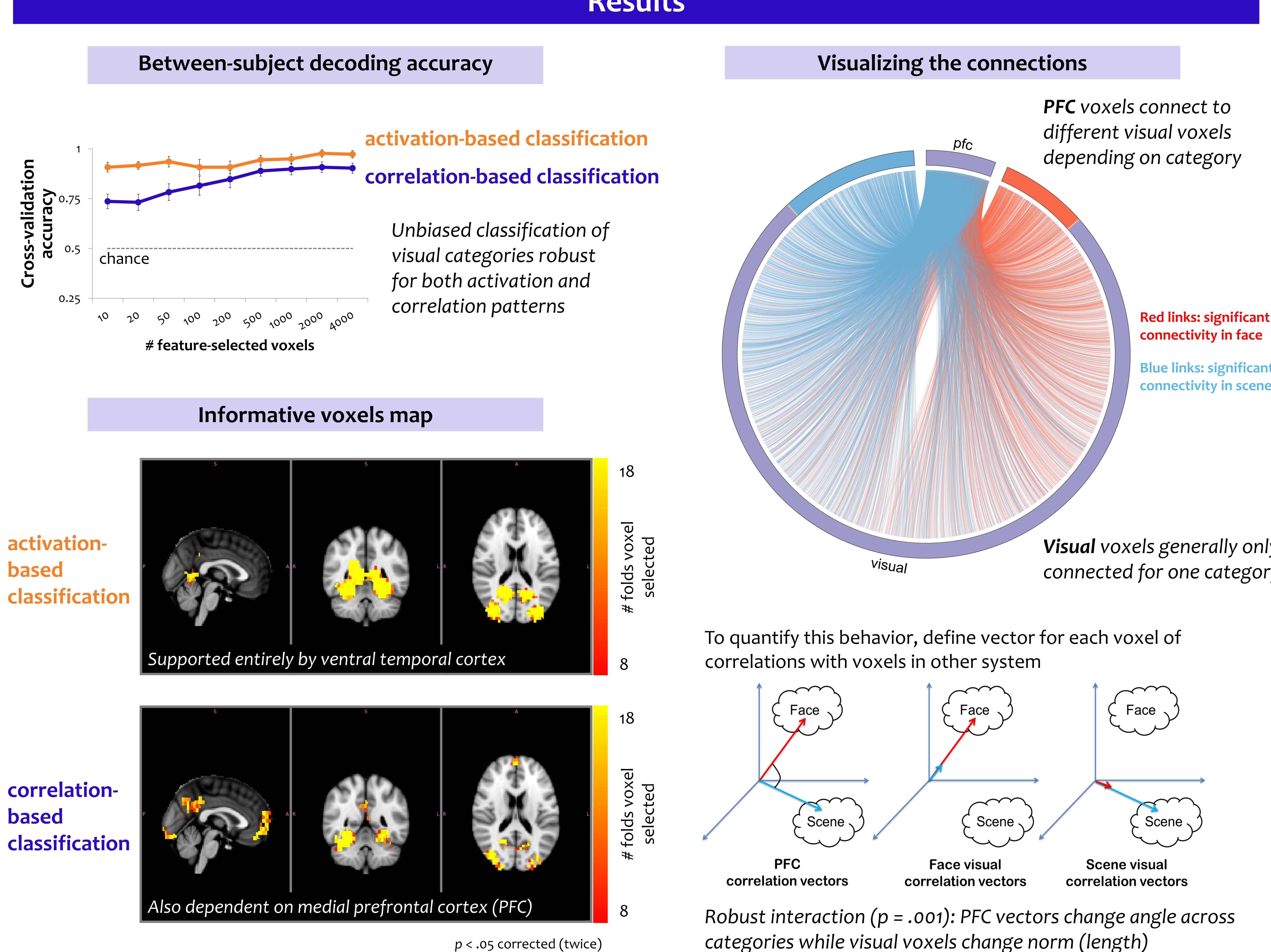
Step 3: Perform nested cross-validation with MVPA to select meaningful pairs and train classifier

Step 4: Decode condition with MVPA on test data sets

Localizer task



- 18 subjects, alternating block design
- block includes 18s stimulation, 12s rest
- 6 **face** blocks and 6 **scene** blocks (12 images)
- subjects anatomically aligned



Discussion

Unbiased analysis of fMRI correlations can reveal engagement of neural systems transparent to traditional activation-based methods

Discovered area of PFC that acts like switchboard for object perception, interacting with posterior areas in category-selective manner

