

Pretrial analysis: thoughts and issues

mike freund

May 17, 2020

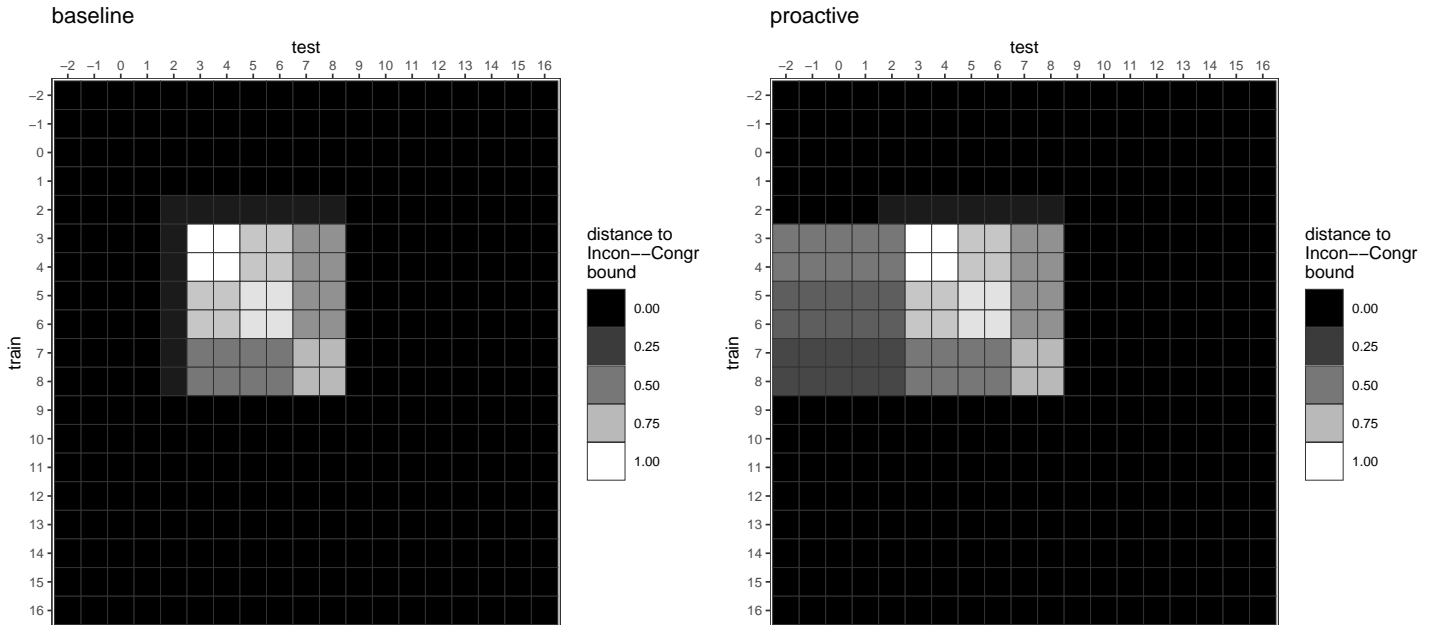
hypotheses

- During mostly incongruent lists (proactive), subjects are preparing in advance of stimulus onset for the occurrence of an incongruent stimulus
- In contrast, during mostly congruent lists (baseline), no preparation occurs.
- Neural coding underlying this preparation is to some degree abstract, i.e., generalizes across particular stimuli (e.g., bias items or PC50 items).
- Neural coding underlying this preparation involves predictive coding of congruency—i.e., a ‘pre-activation’ of target-evoked congruency representations.

approach

Approach problem via “temporal generalization” method. See ADD REF.

- Train decoders at different TRs peri-stimulus onset to classify incongruent versus congruent patterns.
- Test each decoder at each TR.
- Use continuous measure of decoding strength / classifier evidence; e.g., distance to bound.
- Arrange results in TR by TR confusion matrix.



- Rows indicate the TR / knot at which the decoder was TRAINED; Cols indicate the TR / knot at which the decoder was TESTED.
- “Target knots” (i.e., peak high = low univariate response) assumed to be TRs 3 and 4.

plan

- glm-free versus glm-based method
 - assess prev*current trial.type counts per session*subj*run
 - build xmat with extended event models (1tr1knot); experiment with number of pretrial TRs and duration of events — colliniarity?
- if glm-based method viable
 - fit baseline and event model
 - generate diagonal. linear discriminant function: project 'unlabeled' beta pattern vectors. negate congruent patterns, so positive indicates (correct) distance from bound. validate with correlation decoder; difference between templates. should observe clear peak at target TRs. make list of ROIs.
 - generate off-diagonals.
- if glm-based method not viable.
 - ...
 -
 -