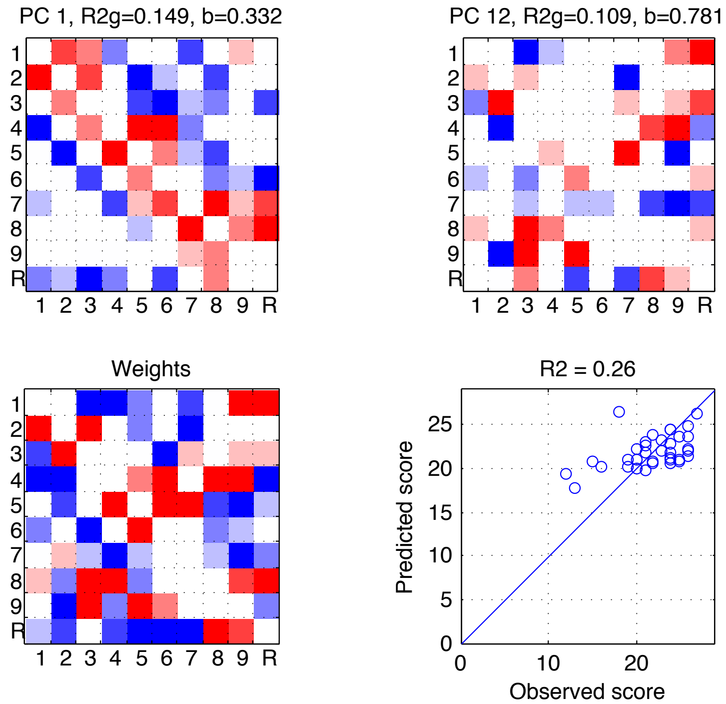
Comment concerning 1st and 2nd order transition performance

1st order transition probability (fix gamma to 0 and alpha to 1)

Training R2 2 comps



1st order component manipulation (max_N_comp=20, instead of 12)

1 comp: R2 = .15 cvR2 = .01
2 comp: R2 = .29 cvR2 = .01
3 comp: R2 = .40 cvR2 = .024
4 comp: R2 = .51 cvR2 = .071
5 comp: R2 = .60 cvR2 = .10

PCA Variance

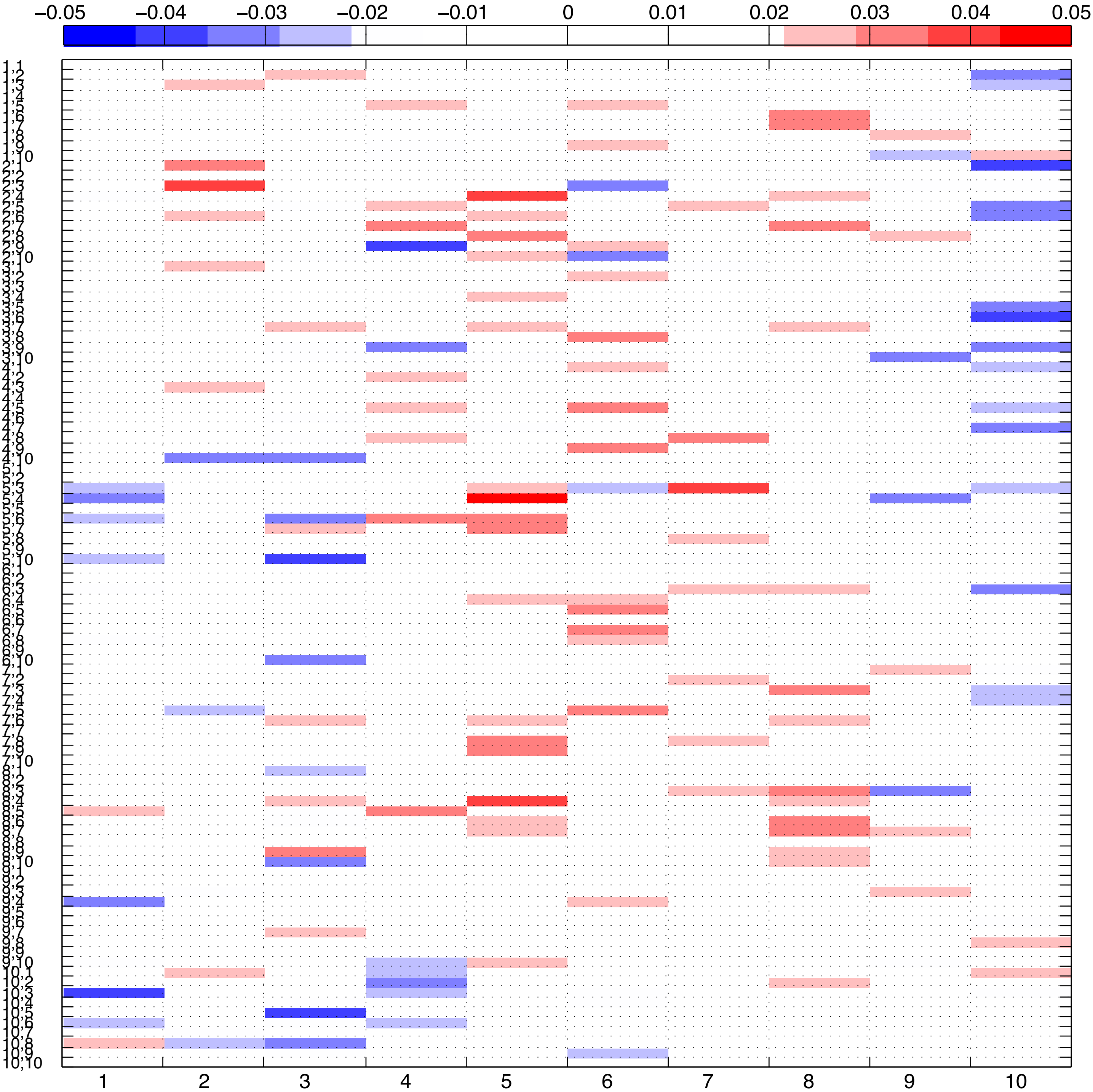
5 comps = .479
10 comps = .681
12 comps = .737
20 comps = .891

1st order Summary

- Training R2 components are more splintered, but do show some systematicity and toggle being captured.
- First order TM does not generalize well particularly with low N_comp values.

<u>2nd order transition probability</u>

- New functions
  - count_2nd_transitions = produces 2nd order transition probability vector
  - TM_learn_batch = the TM probability equivalent of successrep_learn_batch
  - LRaven1_goalfun_TM = the TM probability equivalent of LRaven1_goalfun
- New scripts
  - LRaven1_TM_optim = computes R2 and produces weight,PC, and pred vs obs figures
  - LRaven1_TM_cvR2 = computes cvR2 for 1st or 2nd order transition probabilities
- R2 Results
  - Below is a figure of the weights for 2nd order with 5 comps (R2=.56)
  - The figure takes the 1000 weight vector and turns it into a 100x10
  - In general the PC and weights suffer from a lack of clear interpretability!



2nd order transition probability cont.

2nd order component manipulation

1 comp: R^2 = .34 cvR^2 = .117
2 comp: R^2 = .42 cvR^2 = .188
3 comp: R^2 = .51 cvR^2 = .228
4 comp: R^2 = .57 cvR^2 = .256
5 comp: R^2 = .61 cvR^2 = .252

PCA Variance

5 comps = .286
10 comps = .469
12 comps = .533
20 comps = .744

2nd order Summary

- 2nd order info (and likely beyond 3rd order ect.) is more important and is being utilized by the SR more than 1st order info for score prediction.
- 2nd order transition probability components and weights do not produce components or weights that are very interpretable which is a big weakness.