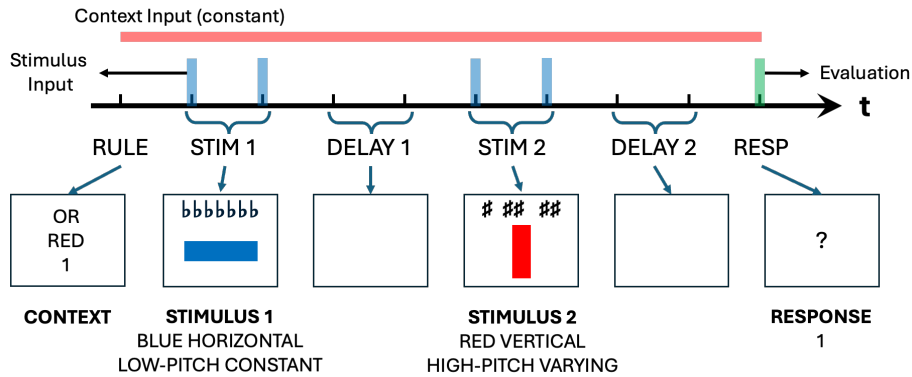


Takeaway: In RNN models, **rich learning** regimes (low initialization scale) produced coordinated, phase-sensitive **representational dynamics** that enabled **compositional generalization**, while lazy regimes failed to develop these dynamics.

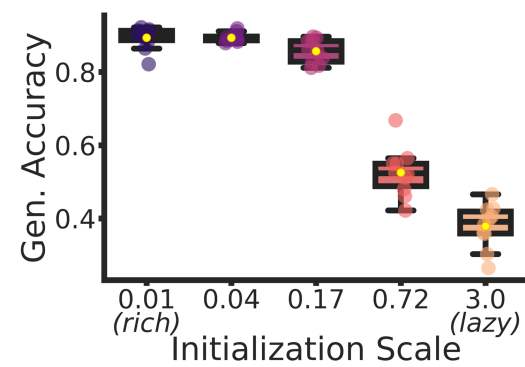
CPRO: a context-dependent compositional task

TRIAL STRUCTURE

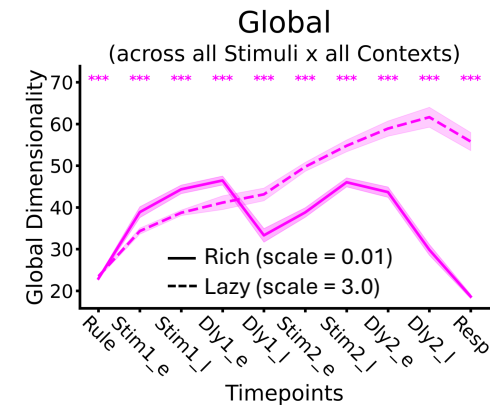
Example Context: "If Stim1 OR Stim2 is RED, choose 1, if not, 2"



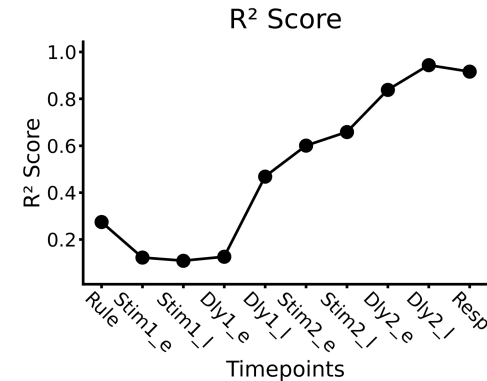
Rich learning shows compositional generalization (in unseen rule combinations)



Hidden unit dimensionality in rich networks shows phase-specific modulations, ...

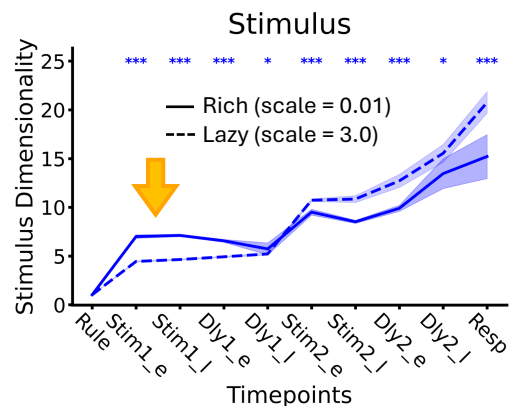


... but explains gen. accuracy only close to response

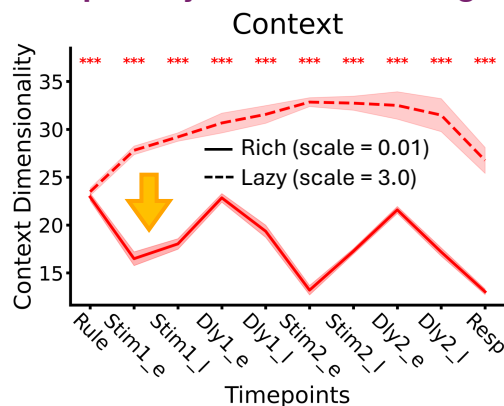


Parsing dimensionality into specific features demonstrates dynamics of rich networks' feature learning, ... and explains gen. accuracy from early in the trial

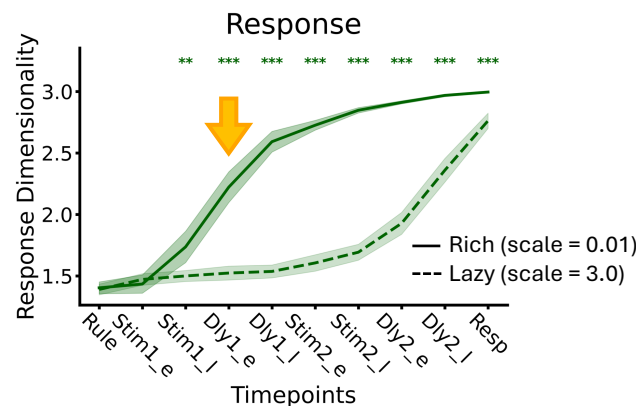
high stimulus dimensionality for Stim. encoding



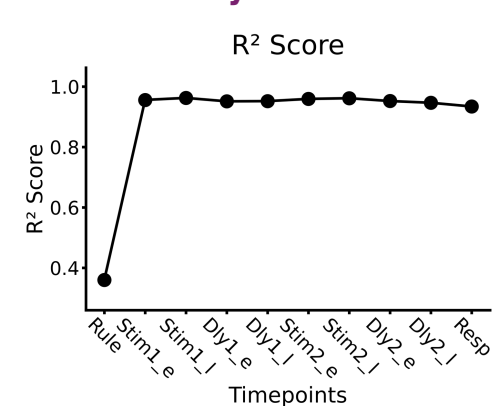
low context dimensionality, especially at Stim. encoding



rise in response dim. after Stim.1, when early response is possible



accuracy from early in the trial



Paper



Code

