Learning to selectively ignore distractors

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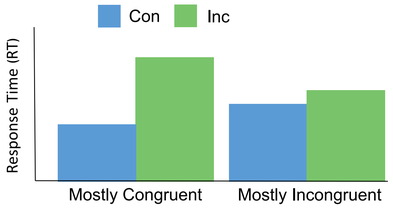
Learning and Selective Attention

Performance on selective attention tasks like Stroop (1935) and flanker (Eriksen & Eriksen, 1977) have been shown to be experience-dependent.

Example: Proportion Congruent Effects

Manipulating the proportion of congruent vs. incongruent items modulates the size of the interference effect.
(e.g., Bugg & Crump)



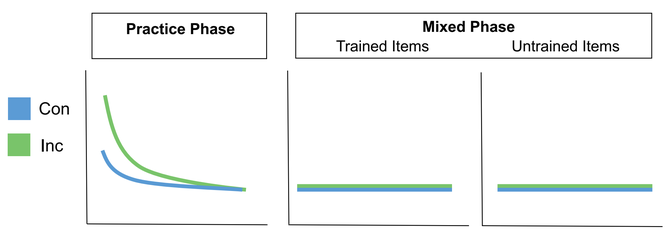
Proportion congruent effects can be highly specific (item-specific) but also general (list-wide, context-specific)

What is being learned?

Learning is general

Reduce task conflict ***or*** engage in voluntary strategies
(e.g., Botvinick, et al., 2001, Gratton, et al., 1992)

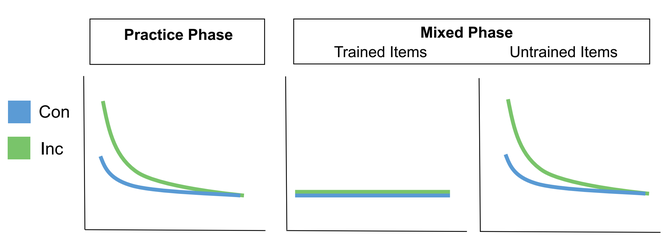
What happens when you are trained on one set of Stroop items and then introduced new items?



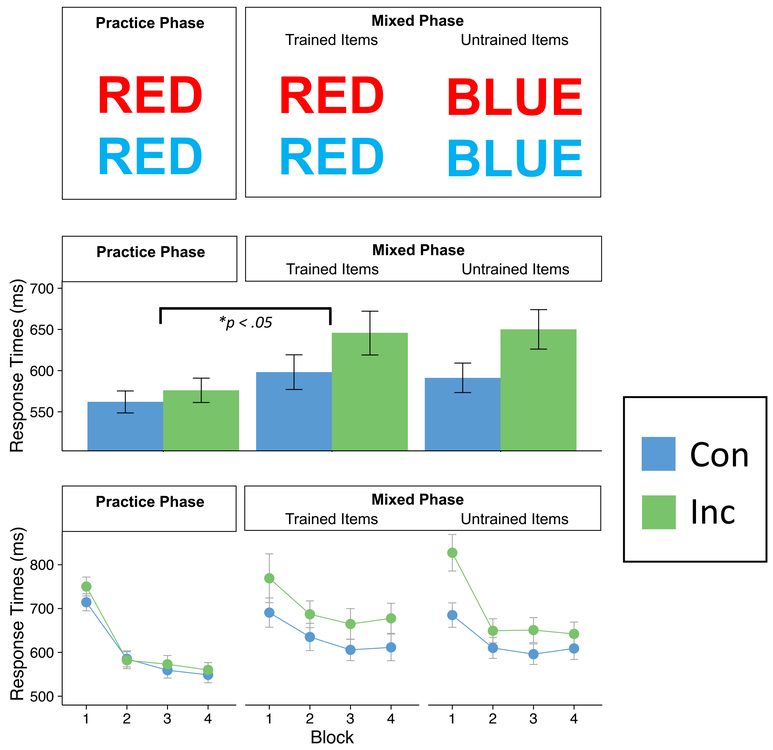
Learning is specific

Stimulus-response associations ***or*** stimulus-attention associations
(e.g., Abrahamse, et al., 2016; Mayr, et al., 2003)

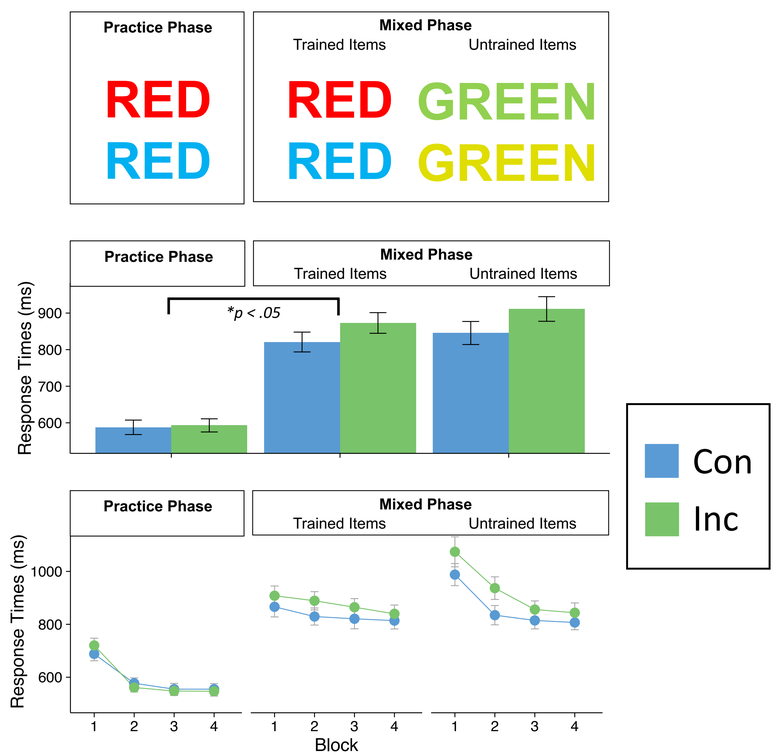
What happens when you are trained on one set of Stroop items and then introduced new items?



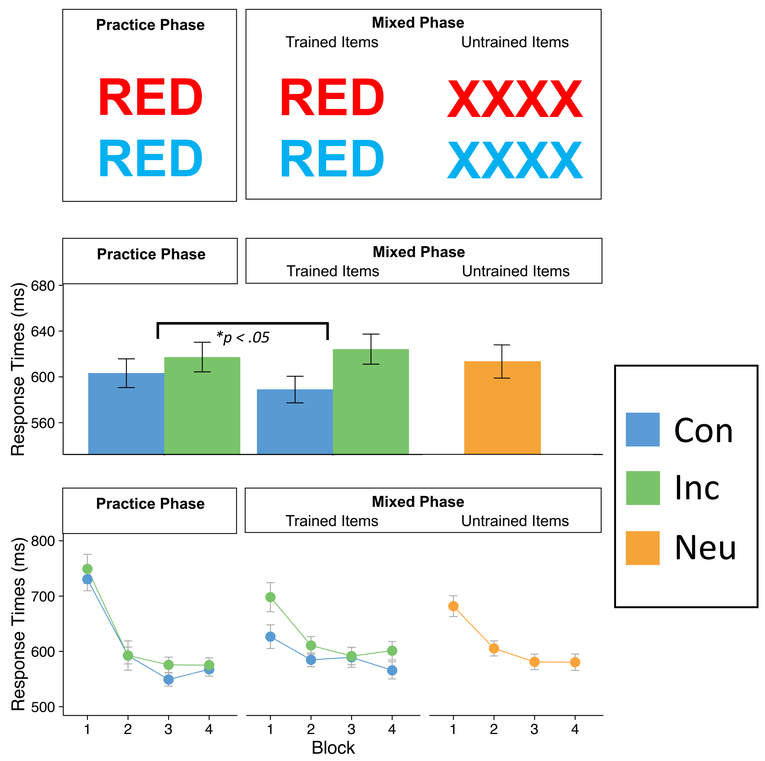
Exp 1: Learning fails to transfer when new related Stroop items are introduced



Exp 2: Learning fails to transfer when new unrelated Stroop items are introduced



Exp 3: Learning fails to transfer when neutral items are introduced



Concluding Comments

Summary

- The Stroop effect was reduced (or eliminated) during the practice phase suggesting participants were learning to ignore the word distractor
- However, learning failed to generalize to new items and any learning for the trained item set failed to transfer to the mixed phase

What is learned?

- The failure of learning to transfer from the practice to mixed phase is surprising and inconsistent with all the cognitive control model predictions
- These phenomena may be better understood in terms of traditional learning phenomena like habituation (Davis, 1970) and extinction (Bouton & Ricker, 1994)

Questions?

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