63.4103 Past Experience Within an Experiment Does Not Alter Figure Assignment Pattern

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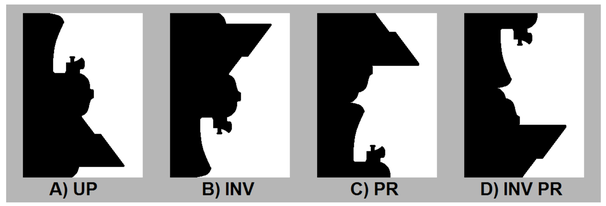
Background

Familiarity is a figural prior[1].
Familiar configurations = figures
Upright (UP) > Inverted (INV) (Fig A vs B)
UP > Part-Rearranged (PR) Novel Configs (Fig A vs C)
➔Configuration familiarity; not parts alone[2]

INV PR = control (parts & whole unfamiliar) (Fig D)



Familiar configuration above = profile of a locomotive (black/left)

Yet, INV[3] & PR may access memories of UP configs
- neural activity indicates familiar parts detected in PR[4,5]
- short term priming from PR to UP[6]

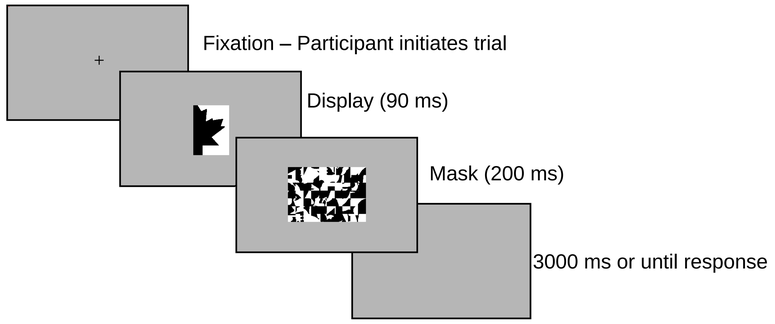
Question

Does previous exposure to UP within an experiment ↑ P(INV or PR = figures) (or vice versa)?
if so, memory access has long lasting effects

General Method

- 38 Stimuli. 4 versions of each
  L&R, B&W balanced between stimuli
  All versions of same stimuli on same side and same contrast across blocks
- 4 Blocks; all versions intermixed/block; one version of a stimulus/block
- 4 sets of stimuli counterbalanced (9-10/set)
- # of trials: 152
- ≥ 19 trials between diff versions of a stimulus
- 96 participants

Trial Structure



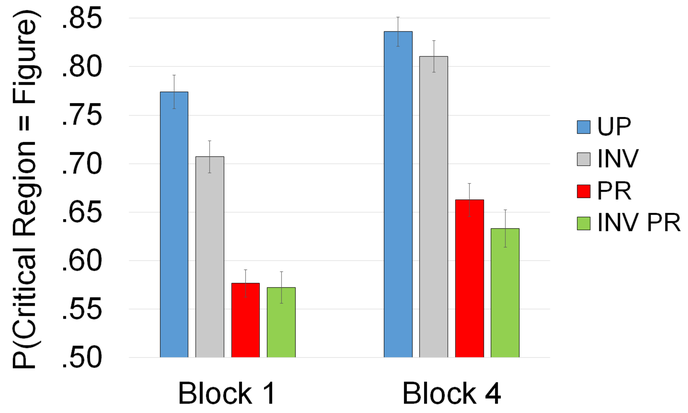
Results

B2 Proportion figure reports by Version Type

B1 Version	Intact	Inverted	PR	Inv PR
Intact		0.760	0.611	0.644
Inverted	0.820		0.603	0.570
PR	0.829	0.770		0.614
Inv PR	0.848	0.721	0.584	

Cell means based on 32 subjects

No effect of B1 version type on B2 performance, *p*s > 0.10



UP > INV > PR = INV PR (*p* < 0.01)
Block 4 > Block 1 (*p* < 0.01)
(B1 < B2 < B3 = B4; *p*s < 0.05)
No differential effect of block for different version types

Summary

Viewing UP first has no influence on P(critical region = fig) in PR or INV

Likewise, viewing INV or PR first doesn't change P(critical region = fig) in UP.

P(critical region = fig) increases with block
This is in combination with a constant decrease in RT from block 1 – block 4 (*p*s <0.05). We interpret this as participants becoming more comfortable with the task and generally improving over the course of the experiments

Conclusion

Under these conditions (≥ 19 trials betw different versions of a stimulus), previous presentations of one version don't affect performance with another version.

Demonstrations of short term priming effects or neural evidence that familiar parts are detected in PR do not imply longer term effects that might change the status of INV and PR as control stimuli for UP.

References

[1]Peterson, M. A., & Gibson, B. S. (1994). *Perception & Psychophysics*, *56*, 551-564.
[2]Peterson, M. A., et al (1991). *JEP:HPP*, *17*, 1075.
[3]Perrett, D. I., et al (1998). *Cognition*, *67*, 111-145.
[4]Peterson, M. A., et al. (2012). *Hippocampus*, *22*, 1965-1977.
[5]Barense, M. D., et al (2012). *Cerebral Cortex*, *22*, 2680-2691.
[6]Cacciamani, L., et al. (2014). *Frontiers in psychology*, *5*.

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