Proactive Interference and Practice Effects in Working Memory Span Task Performance

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INTRODUCTION

Role of Proactive Interference (PI) in WM Span Performance
- PI occurs when previously learned information interferes with learning of new information
- Ability to resist PI build-up is argued to contribute to WM span performance & predict high-level cognition (Bunting, 2006; Lustig, May, & Hasher, 2001; May, Hasher, & Kane, 1999)
- PI effects have only been investigated with verbal WM span tasks

Practice Effects in WM Span Performance
- Practice on cognitive tasks typically increases performance but decreases correlations with gF (e.g., Ackerman, 1987)

METHOD

117 introductory psychology students
2 (PI: High vs. low) x 3 (block: 1, 2, 3) mixed design
- Low-PI condition had ~15 sec distracter task between each trial
- Set sizes of 2-5 distributed across 3 blocks (12 total trials)

Raven’s Advanced Matrices Test used to measure gF

RESULT

Greater increase in recall performance across blocks in Low-PI condition
- There was a significant divergence in gF correlation between High- and Low-PI conditions for Block 3, when PI would be greatest in the High-PI condition, and practice would be greatest in both conditions

DISCUSSION

Summary of Key Results
- This study replicates previous experiments showing that reducing PI across trials increases WM span scores as compared to traditional span tasks
- Additionally, this study extends these PI results to a visuospatial span task
- This suggests that PI effects are not just due to build-up of semantic interference
- Practice increases span scores across blocks, but this increase is greater in the Low-PI condition
- While performance increases under Low-PI conditions, the correlation with gF decreased, whereas for the High-PI condition the correlation with gF increased
- This suggests that practice effects reduced the relationship between span performance and gF, but only in the Low-PI condition

Theoretical Implications
- These data support the idea that resisting PI build up is a key function of WM & executive attention (Engle, 2002; Engle & Kane, 2004)
- These data support the idea that practice reduces the span task gF correlation, but only when PI is reduced

REFERENCES

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