



Examining the Influence of Part-Set Cues on Memory for Chess Positions

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Abstract

The present study explored the influence of part-set cuing on spatial memory. Cole et al. (2013) reported part-set cuing facilitation with snap circuits, but Watkins et al. (1984) showed no influence of part-set cuing on memory with chess boards. The current experiment was designed to determine the origin of these disparate results. Participants viewed four chess boards with either densely and sparsely placed pieces and then were asked to reconstruct the board either with or without cues. Results indicated that part-set cues did not influence memory for chess positions in either the dense or sparse presentation conditions.

Introduction

Part-set Cuing (PSC)

- Inhibitory effects with free recall tasks
 - Cues inhibit recall for remaining items
- Facilitative effects with serial order
 - Cues facilitate recall for remaining items

Chunking

Ability to cluster information or responses due to relatedness, which helps to improve memory in a recall task.

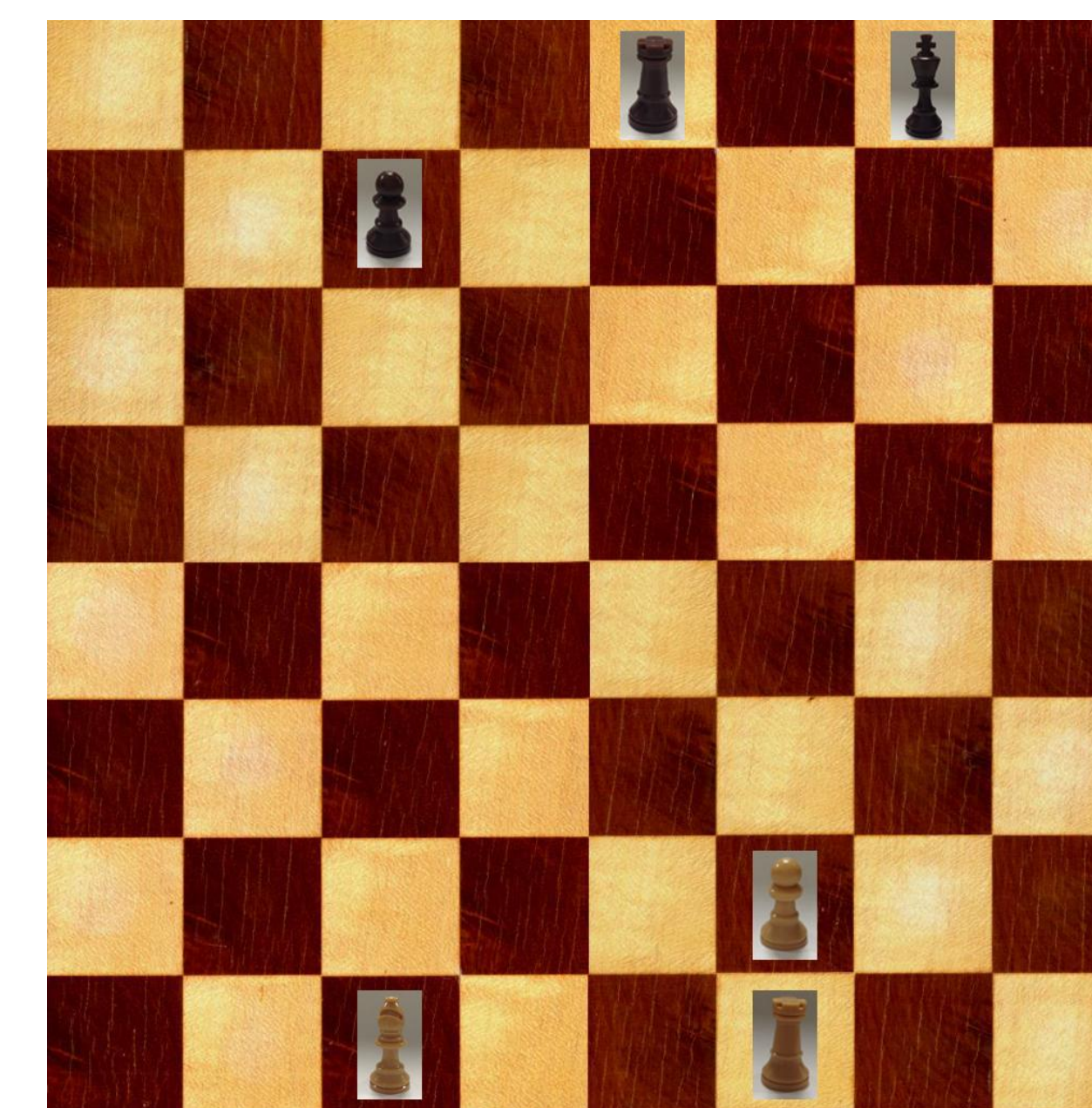
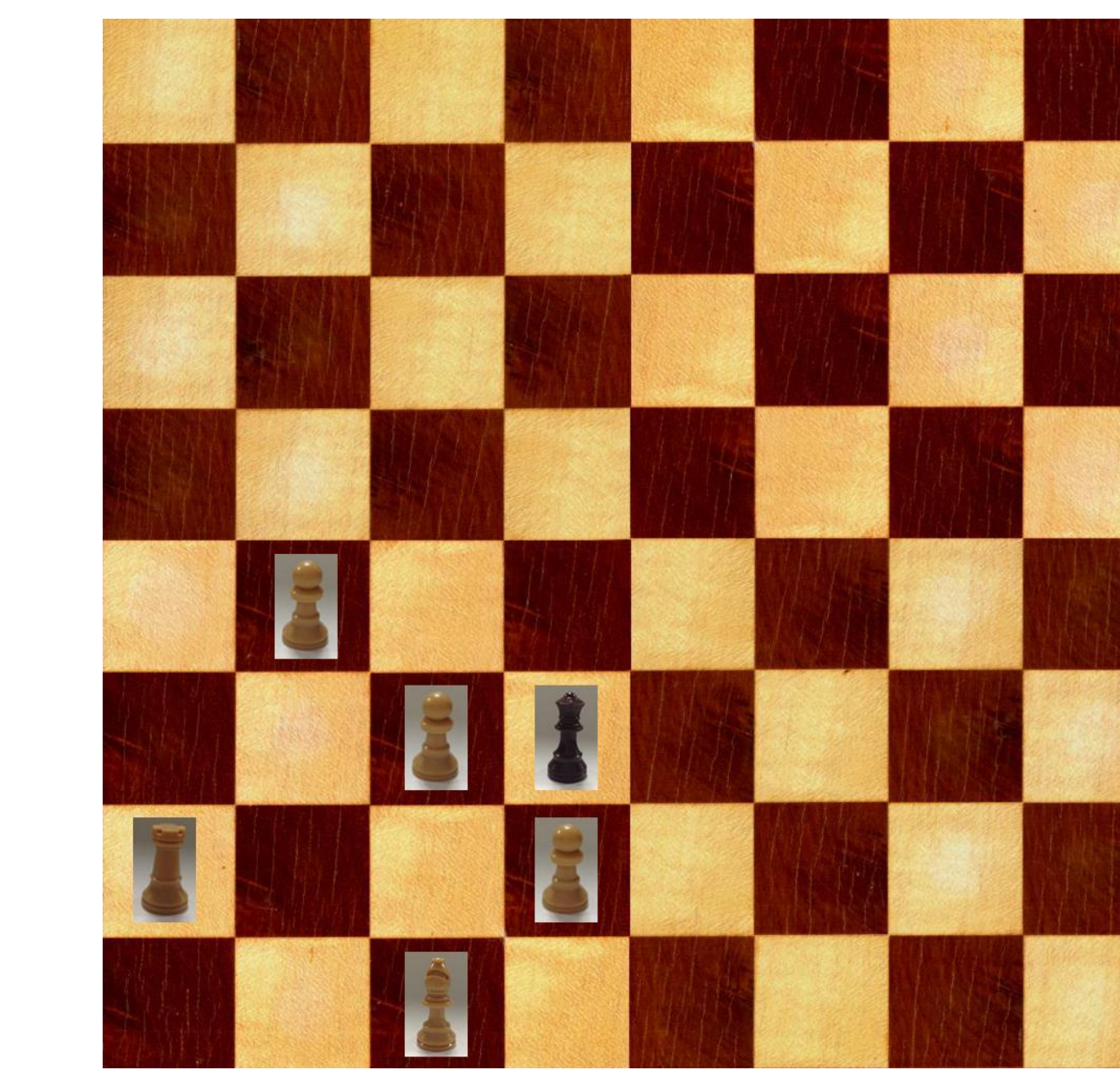
- Most part-set cuing studies Watkins et al. (1984) and Drinkwater et al. (2006) used chess boards to determine part-set cuing effect on spatial memory. However, both studies did not find facilitation.
- Cole et al. (2013) showed that part-set cuing facilitations with spatial snap circuit stimuli.
- Our study attempted to resolve the disparity between the two spatial memory findings

Hypotheses

1. Showing participants densely placed chunks and giving participants cues will facilitate spatial memory recall.
 - Cues facilitate memory recall because their strategy is consistent with the cues.
2. Sparsely placed chess pieces and uncued recall will result in no facilitation.
 - Sparsely placed pieces creates awkward chunks for recall.

Methods

Full Board



Dense

- Cued
- Uncued

Sparse

- Cued
- Uncued

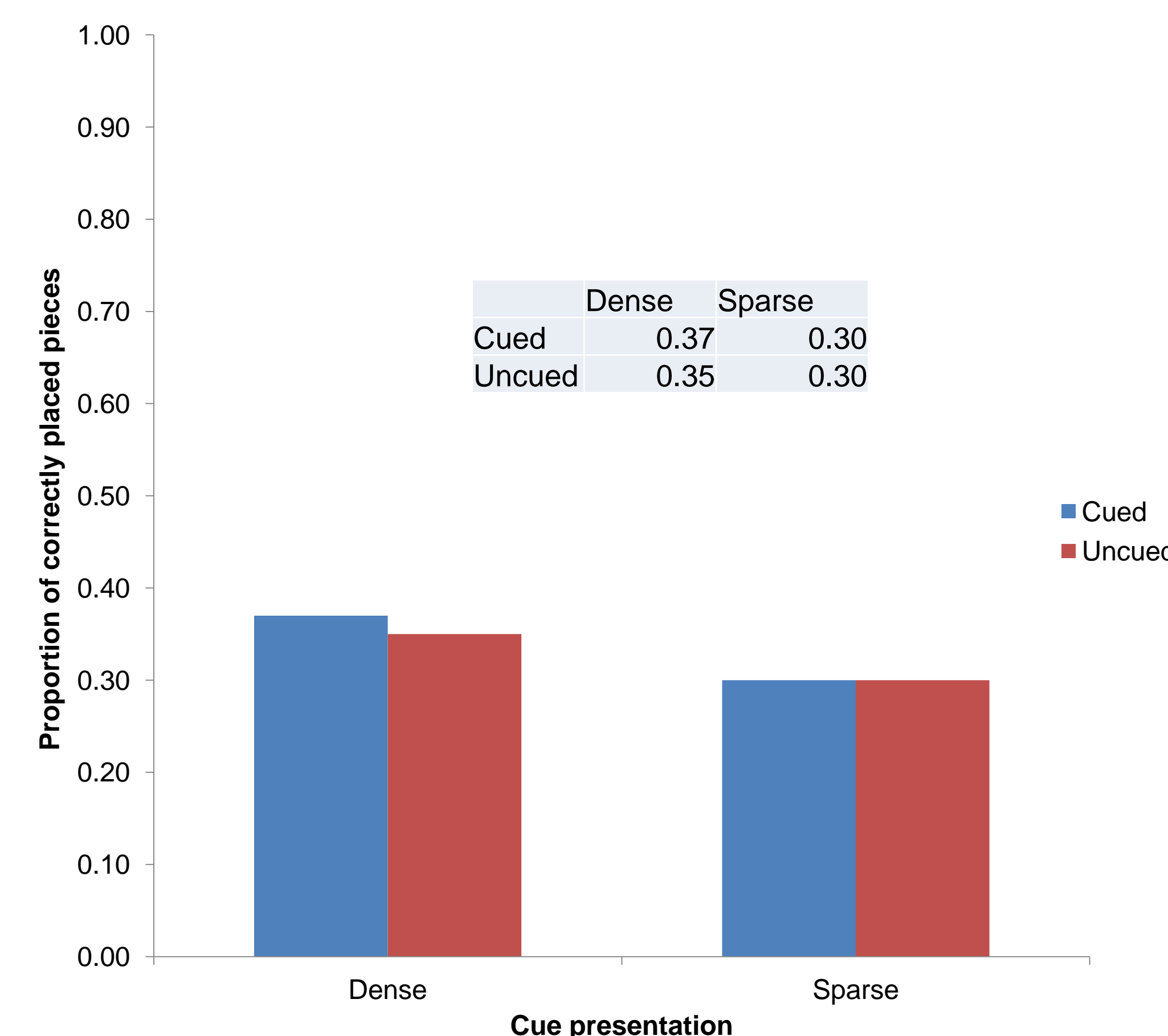
Conclusions

- Cues did not facilitate memory in both dense and sparse presentations
- Consistent with previous chess studies.
- Inconsistent with Cole et al. (2013) and previous snap circuit studies.

Future Studies

- Study if connectivity between pieces facilitates memory
- Test to see if familiarity with objects being tested has an effect on facilitation
- Study the effect of significant chess piece positions and not significant positions on memory recall.

Results



Analysis of Variance (ANOVA) was used for statistics.

Cued vs. Uncued (Presence)

- There was no significant main effect of cue presence
- $F(1, 57)=0.27, p=.60$
- Part-set cues did not facilitate performance.

Dense vs. Sparse (Presentation)

- Main effect of cue presentation observed.
- $F(1, 57)=8.88, p=.004$
- Dense presentation facilitated performance.

Cue Presentation and Presence Interaction

- $F(1, 57)=0.36, p=.55$
- No significant part-set cuing facilitation observed in either presentations

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References

1. Drinkwater, K., Dagnall, N., & Parker, A. (2006). Effects of part-set cuing on experienced and novice chess players' reconstruction of a typical chess midgame position. *Perceptual and Motor Skills, 102*, 645-653. doi:10.2466/PMS.102.3.645-653
2. Cole, S. M., Reysen, M. B., & Kelley, M. R. (2013). Part-set cuing facilitation for spatial information. *Journal Of Experimental Psychology: Learning, Memory, And Cognition, 39*(5), 1615-1620. doi:10.1037/a0032424
3. Watkins, M. J., Schwartz, D. R., & Lane, D. M. (1984). Does part-set cuing test for memory organization? Evidence from reconstructions of chess positions. *Canadian Journal Of Psychology/Revue Canadienne De Psychologie, 38*(3), 498-503. doi:10.1037/h0080855