

Spatially broad but selective  
attention leads to more analytic  
problem solving

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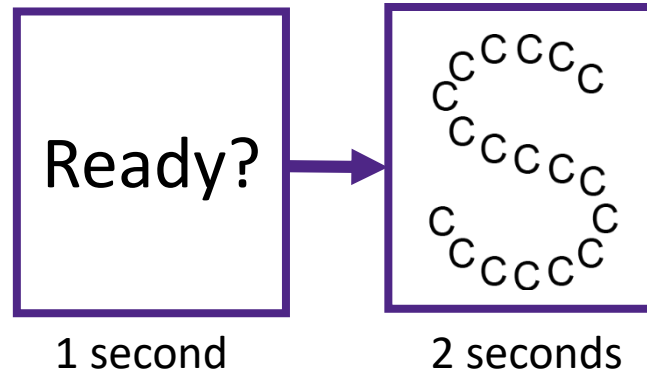
Creative Brain (Beeman) Lab

# Introduction:

## Attention in visual processing & problem solving

- Selective attention related to analytic problem solving
- “Leaky” (less selective) attention related to insight problem solving
- Various associations; 1 induction
  
- “Global” attention associated with creative processing (shared RH components, etc), but never induced?
- Visual hierarchical stimuli: does attending to local or global levels change attention in ways that affect how we solve verbal problems?

# Attention induction: Judgments about hierarchical letter stimuli



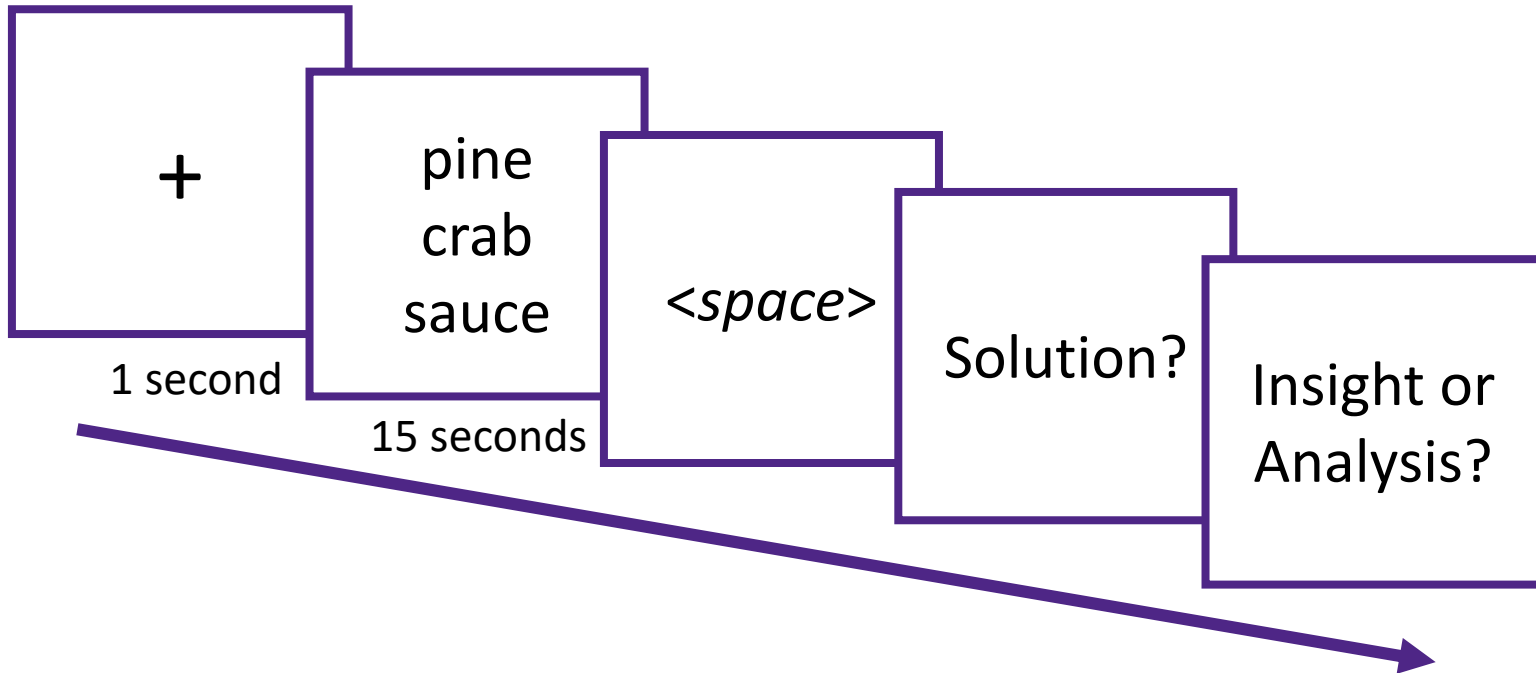
- **Local** = Is the SMALL letter either an H or S? (Yes/No)
  - Select the local letter, ignore global
  - Narrow (spatial) focus of attention → analytic solving?
- **Global** = Is the BIG letter either an H or S? (Yes/No)
  - Ignore the local letter, select the global
  - Broad focus of attention → insight solving?
  - Broad (spatial) BUT requires selective attention → analytic solving?
- **Match** = Do the big and small letter match? (Yes/No)
  - Spreading/leaky attention → increased insight solving?

# Attention induction results

	<b>condition</b>	<b>%correct</b>	<b>Mean RT</b>	<b>%correct (re-induction)</b>	<b>Mean RT (re-induction)</b>
Expt. 1	Local	97.4%	581ms		
	Global	95.9%	566ms		
	Match	95.6%	730ms		

- Participants in all groups performed really well

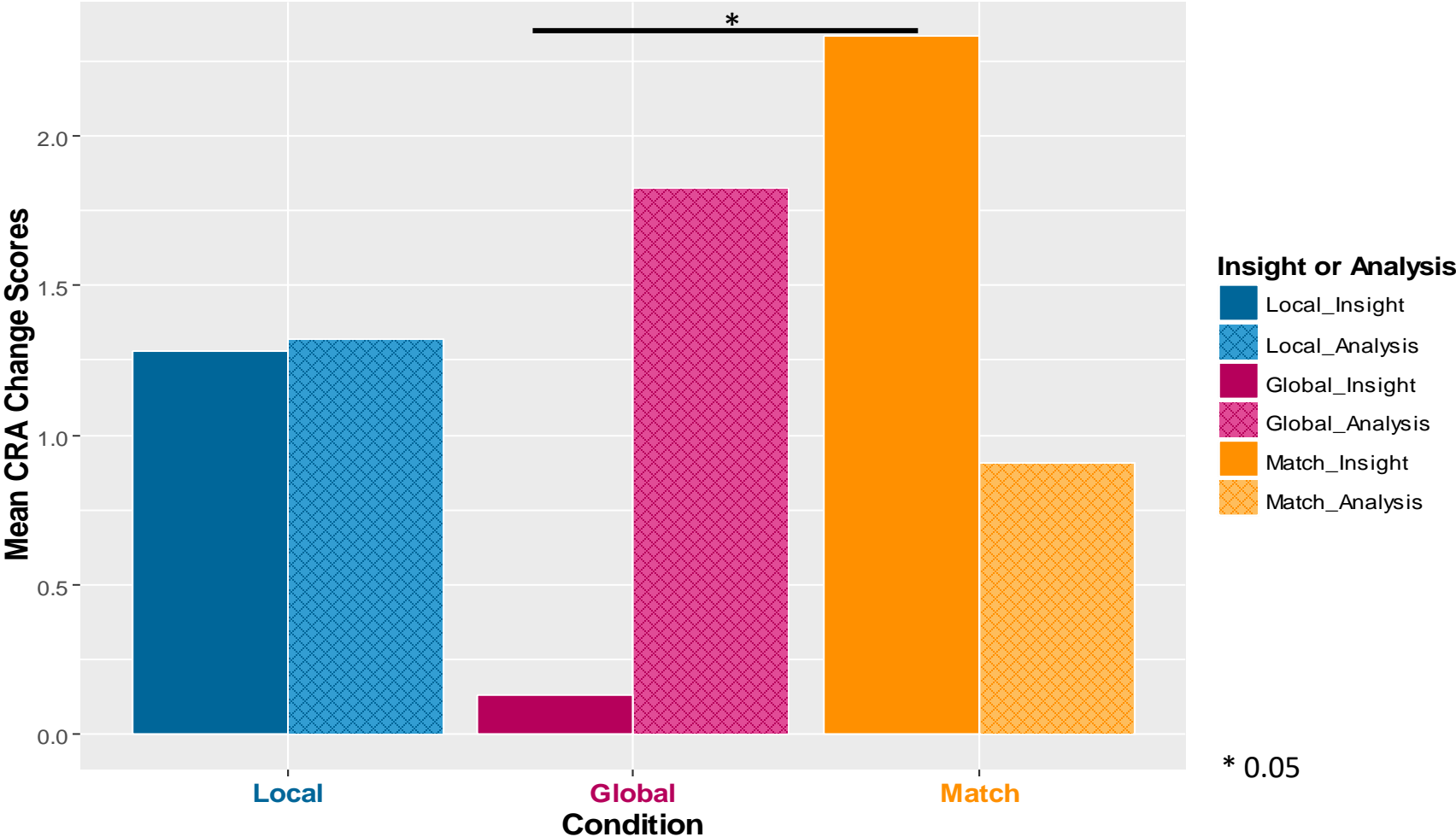
# Compound Remote Associates (CRA) problems



- Set of 50 CRA problems before and after the hierarchical letter task
- DV = Change in insight and analytic solving

# Experiment 1 Results

Change in insight and analytic solving following local, global, and match inductions



# Experiment 2

Paradigm changes:

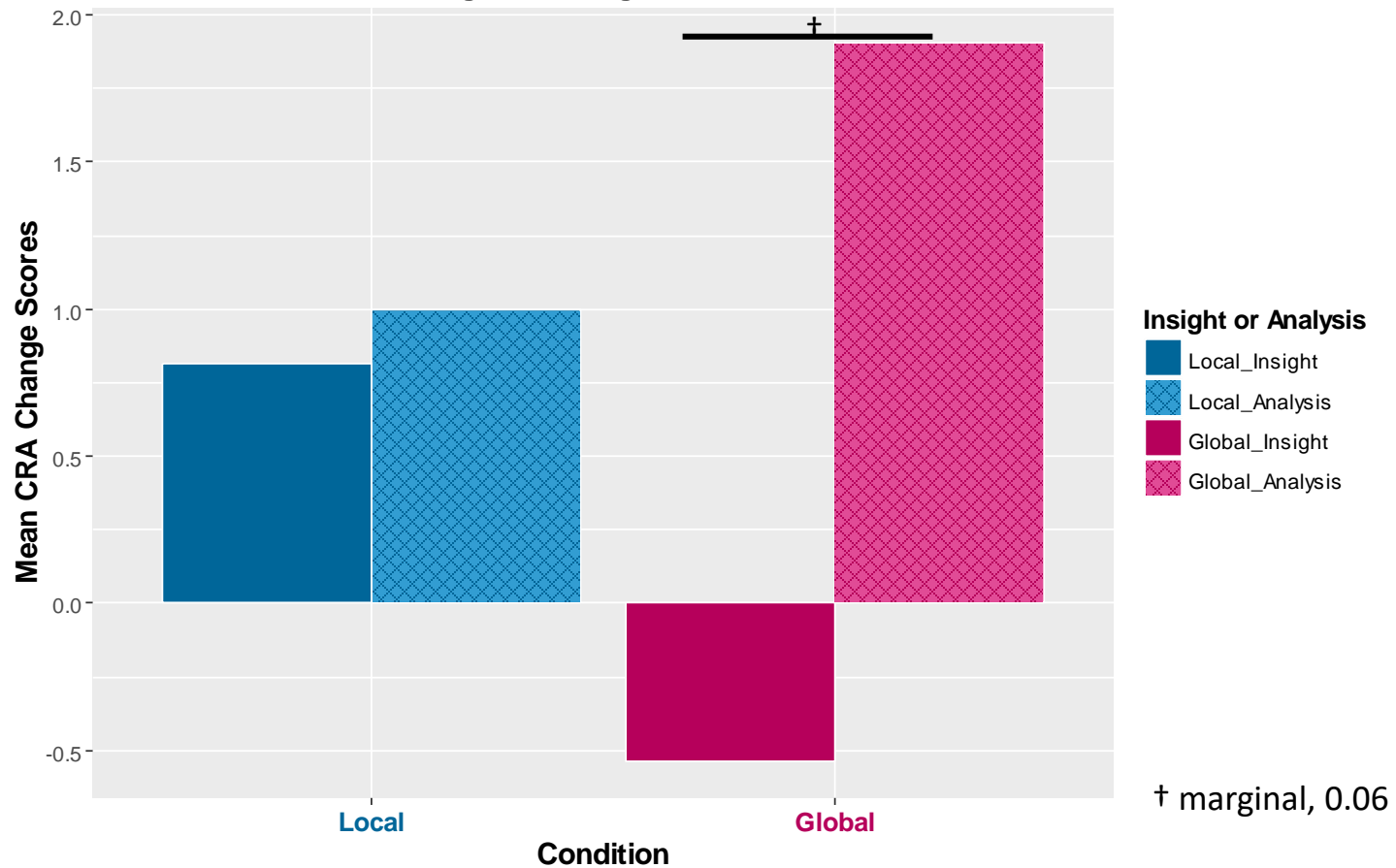
- Counterbalanced order of CRA problem sets
- Re-induced attention task during second set of CRA problems

	condition	%correct	Mean RT	%correct (re-induction)	Mean RT (re-induction)
Expt. 1	Local	97.4%	581ms		
	Global	95.9%	566ms		
	Match	95.6%	730ms		
Expt. 2	Local	94.9%	591ms	94.6%	556ms
	Global	97.1%	602ms	96.6%	549ms
	Match	96.7%	720ms	96.7%	658ms

- Again, all groups perform really well
- Lower RTs after re-induction suggests they are not habituating to the induction, but getting better

# Experiment 2 Results

Change in insight and analytic solving following local and global inductions



- Match condition = not enough data, but does not appear to replicate...



# Conclusions

Why does attention to global letters/level increase analytic problem solving?

- Conflicting information from local level requires selective attention to overcome interference

# What's Happening in the Creative Brain Lab



- Sleep and problem solving  
Kristin Grunewald



- Performance pressure and creative problem solving  
Kyle Nolla

- Intuition (problem solving and real life scenes)
- In general, mood & attention interactions with problem solving and creative thinking