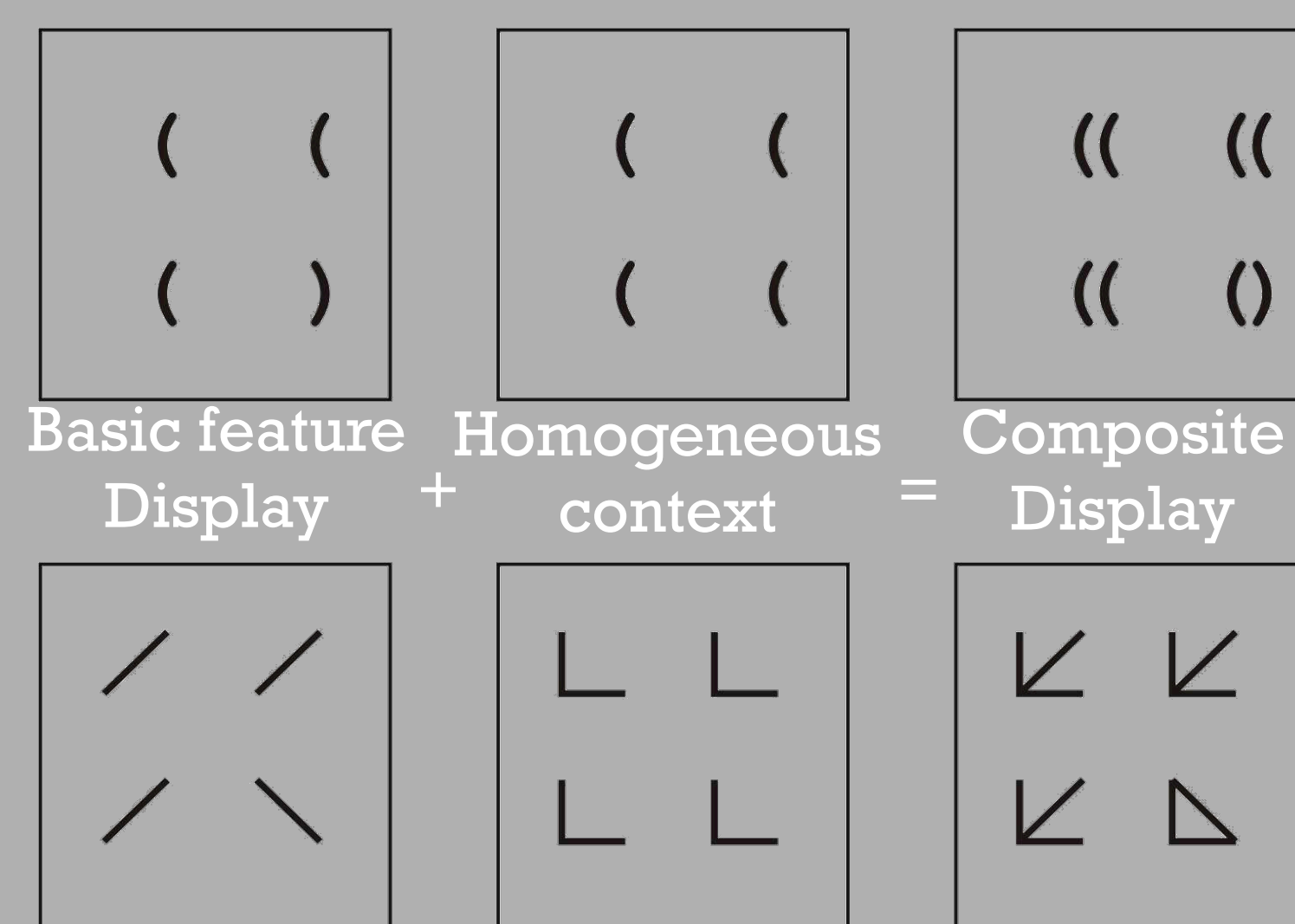


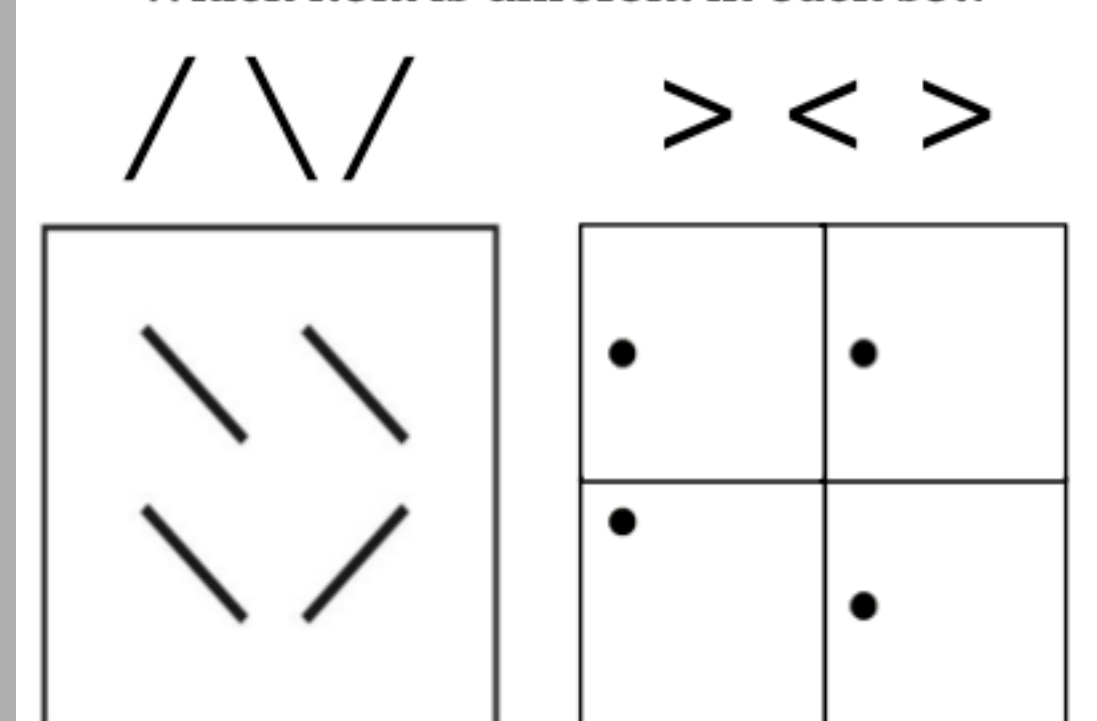
Theory of Basic Gestalts

Configural Superiority Effect

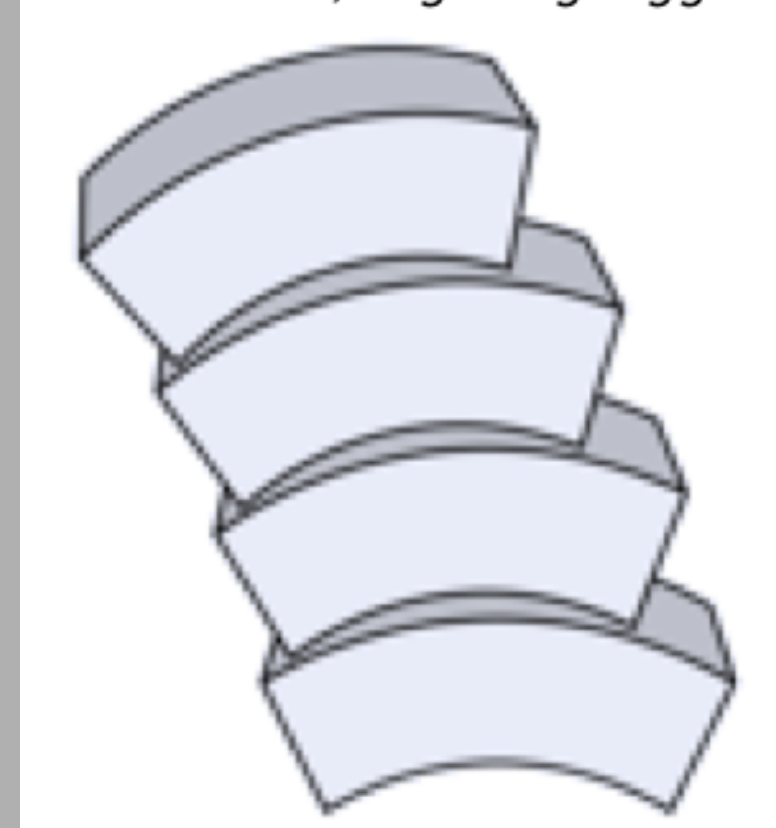


The composite displays contain *Emergent Features*, which facilitate performance despite extra perceptual load.

Which item is different in each set?



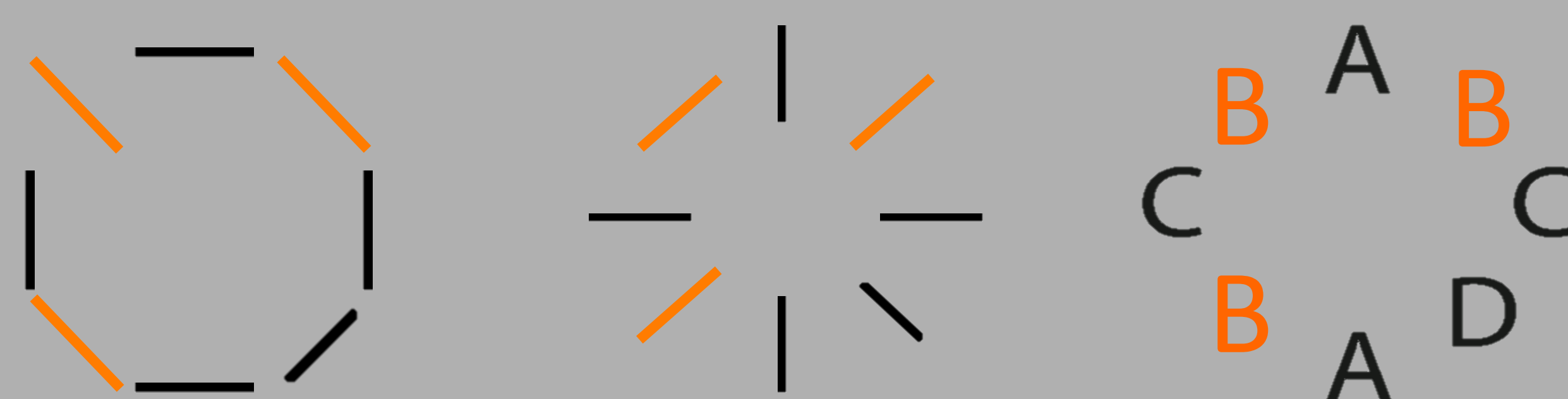
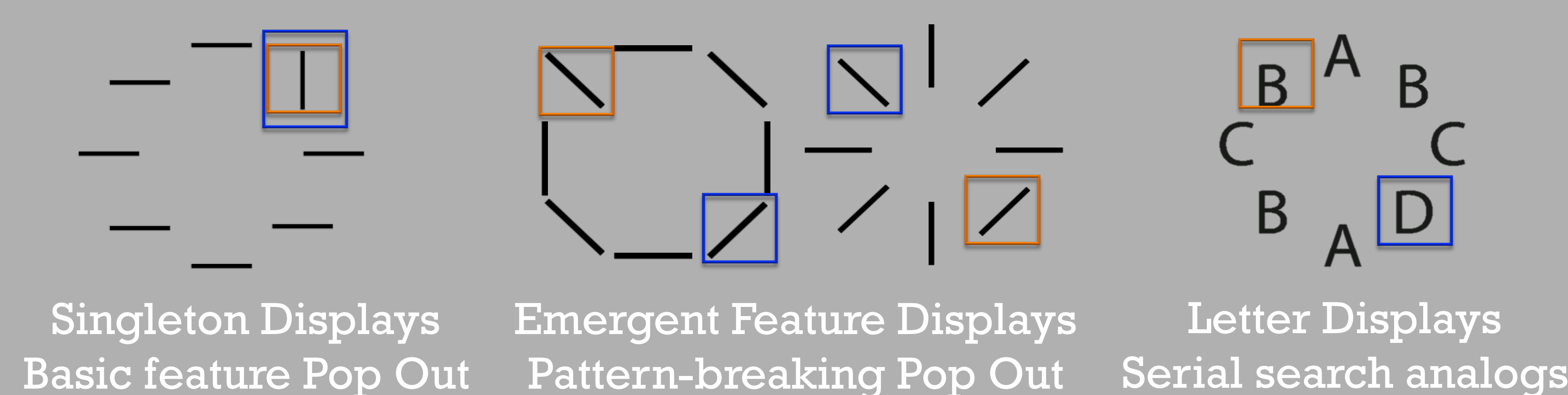
All the same, or getting bigger?



Inter-item grouping makes common items pop out (above) and identical items look different (right).

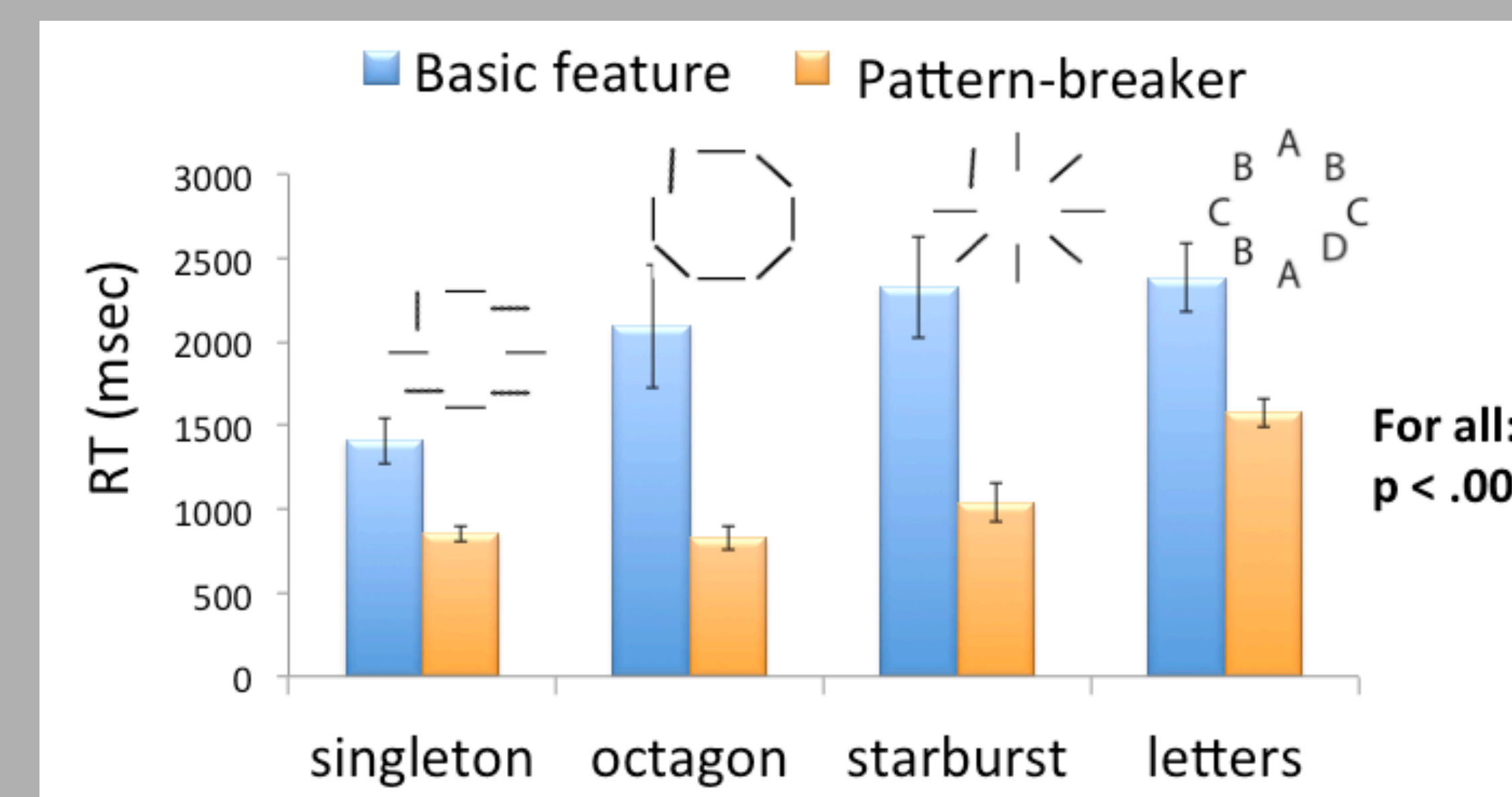
Pattern-breaking vs Basic Feature Pop Out

Two tasks using same displays:
1. Find the Pattern-breaking target (orange box)
2. Find the Basic feature target (blue box)

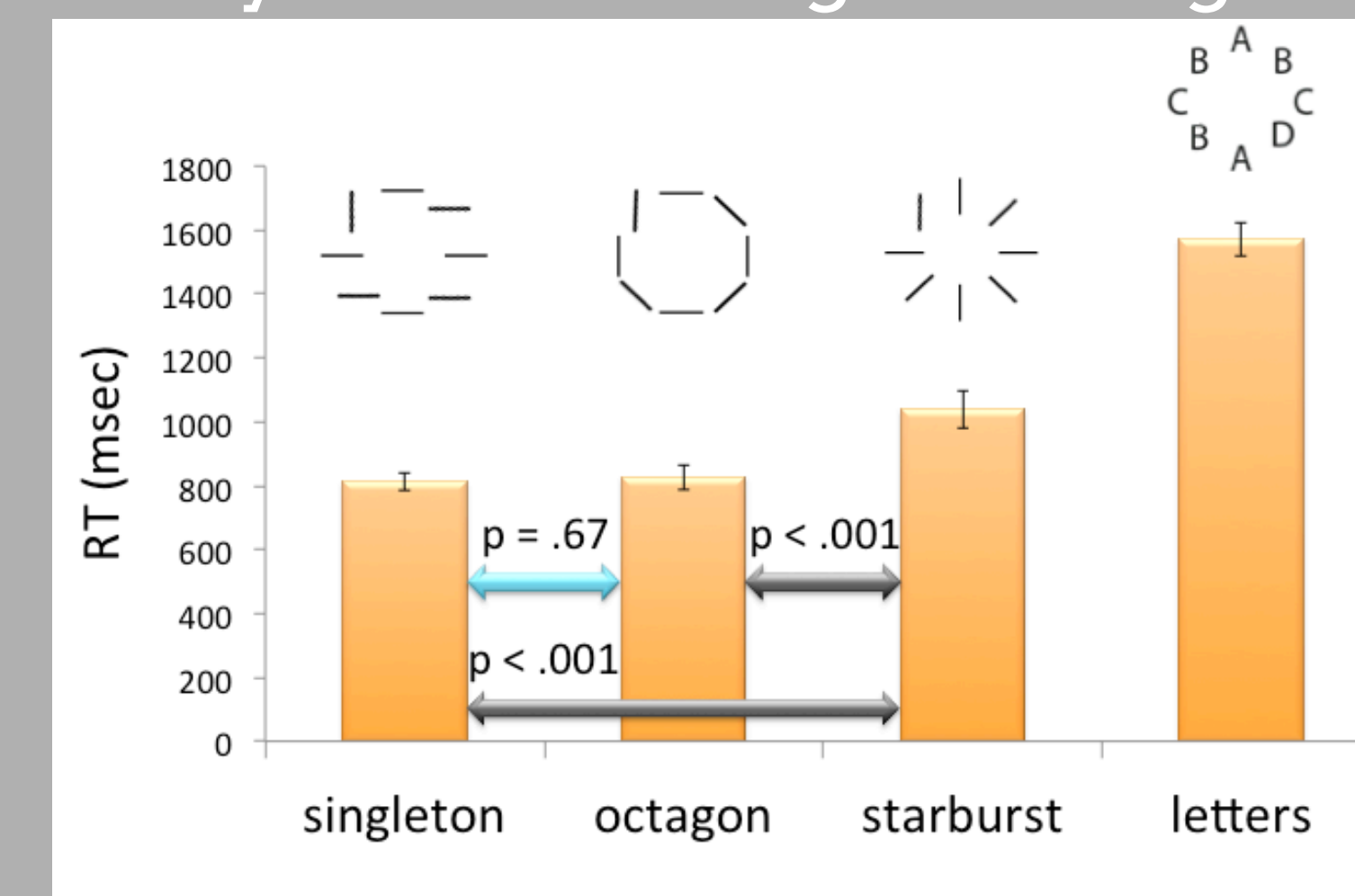


The Pattern-breaking target is one of the most common items in the display, and the Basic feature target is unique. If Pop Out is based only on basic feature differences, none of the common items should pop out.

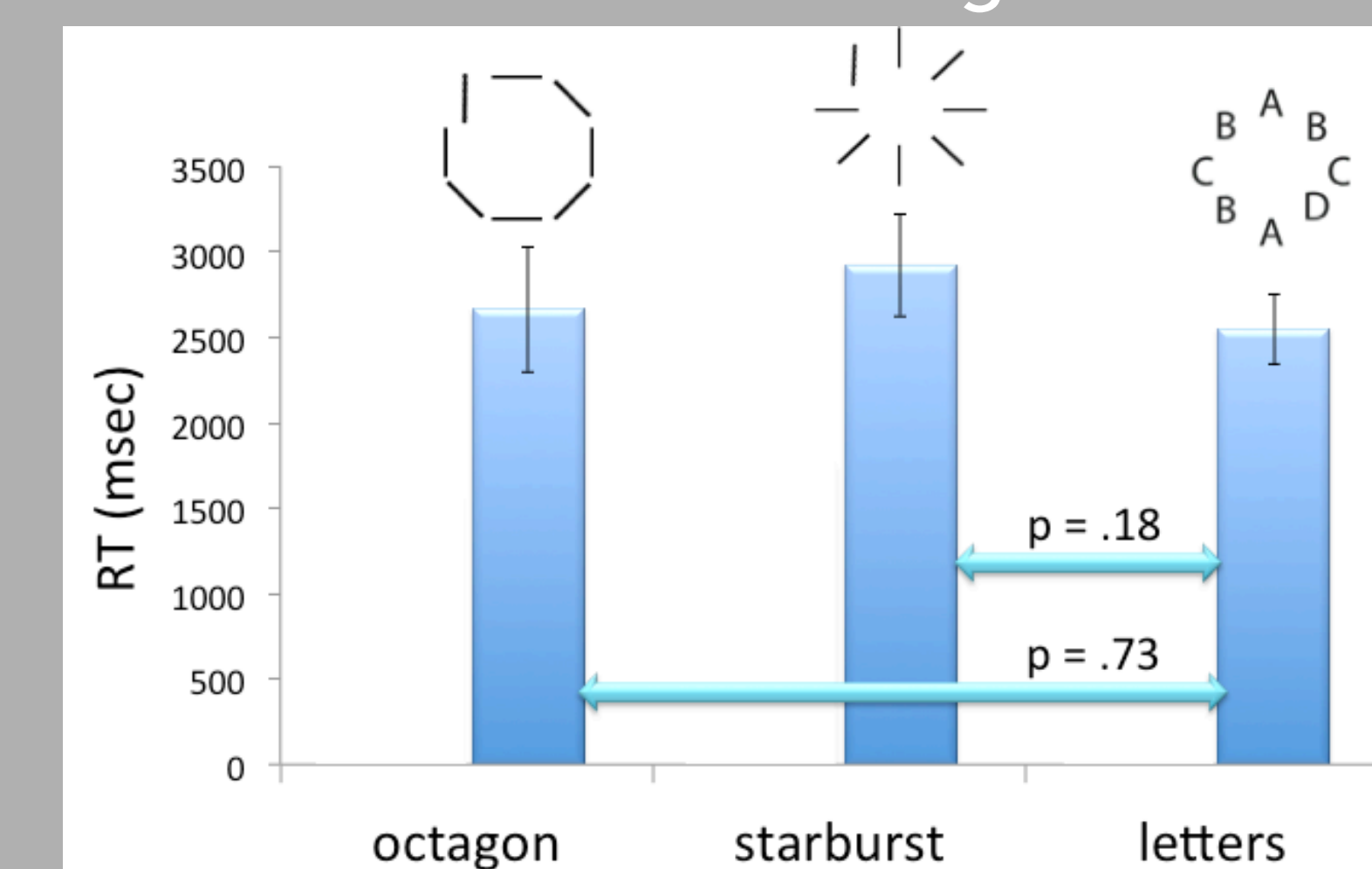
Pattern-breakers pop out more than unique Basic Feature targets



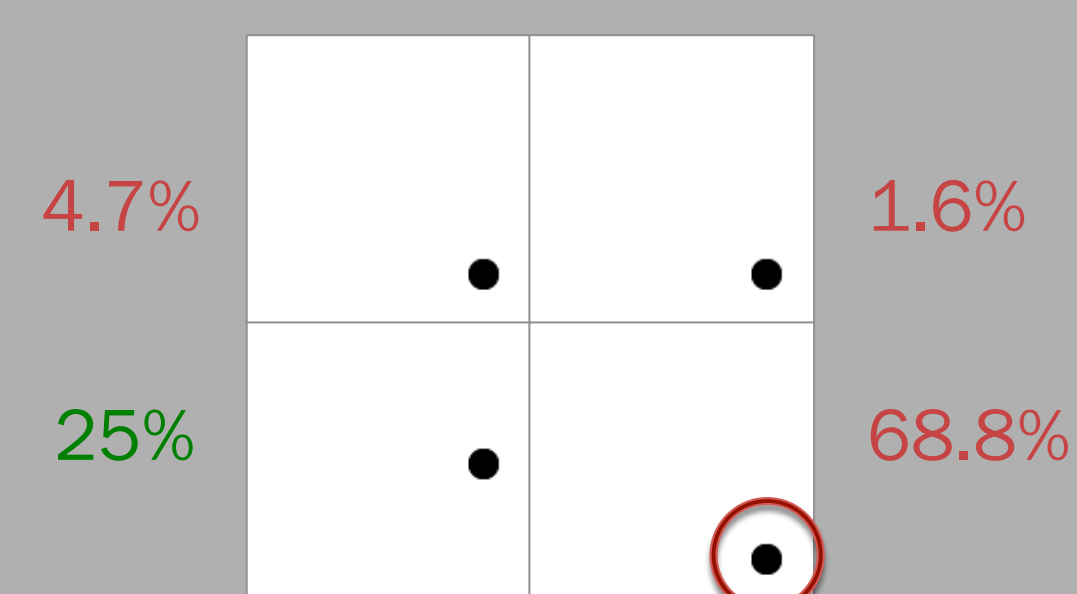
Pattern-breakers were sometimes as easy to find as singleton targets.



Serial search was required to find Basic feature targets.



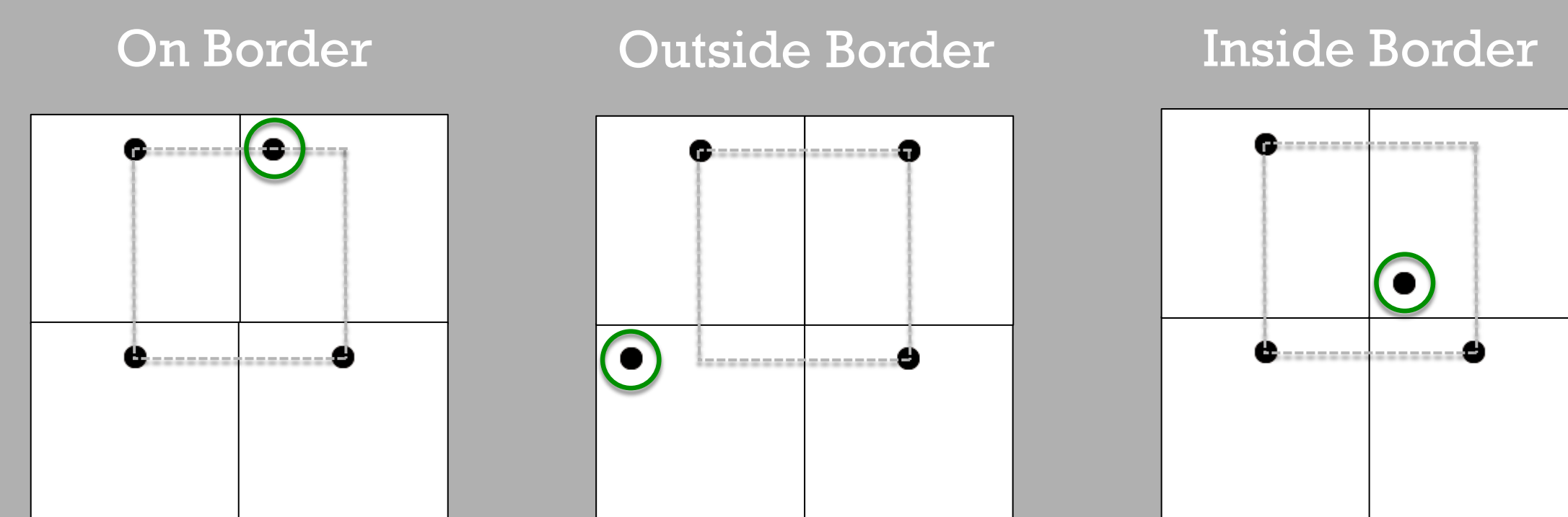
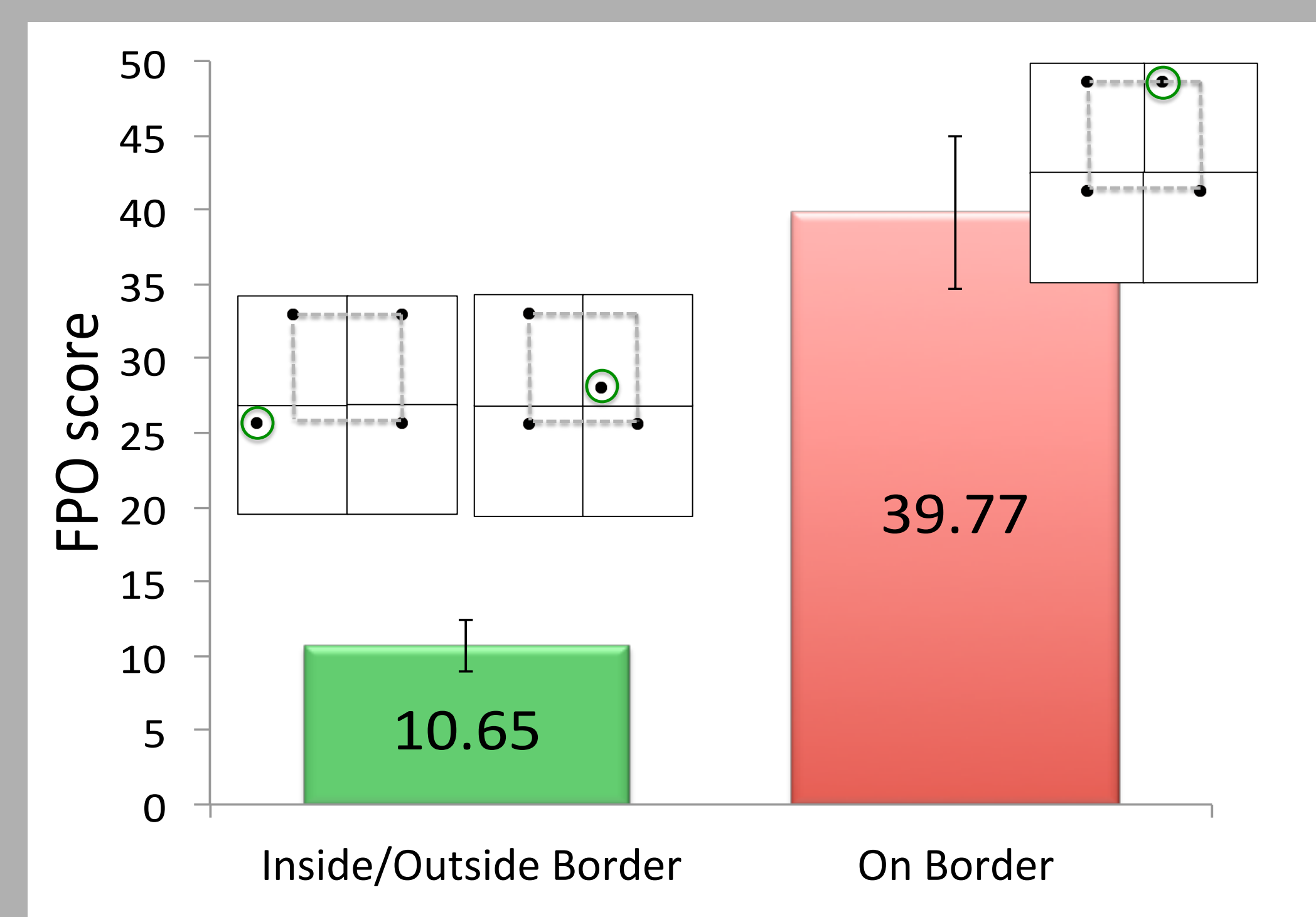
Grouping and False Pop Out (FPO)



False Pop Out (FPO): A distractor poses as a target by receiving more error responses than other distractors.

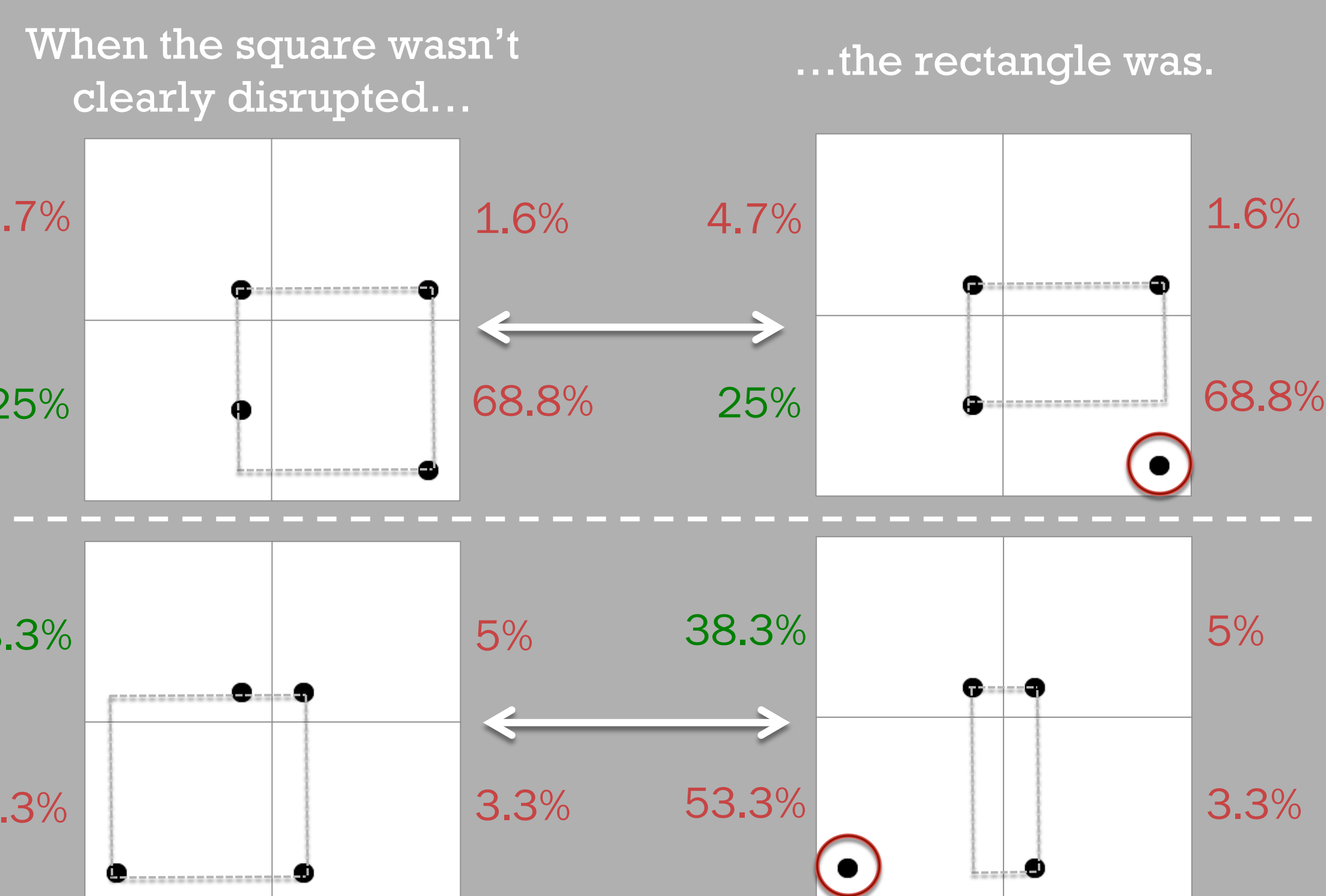
A metric for FPO confirmed that low accuracies for Border targets was a result of increased FPO.

$$\frac{\% \text{ of responses for FPO distractor}}{\text{Mean } \% \text{ of responses for remaining distractors}} = \text{FPO}$$



Subjects reported using an imaginary square to help find the target. This strategy resulted in high accuracies on Inside and Outside Border displays, but significantly worse performance for On Border displays.

On Border displays contained a competing imaginary pattern – a rectangle. The FPO distractor was always clearly breaking the formation of the rectangle.



Wrap it up

These data suggest that disruptions of configural relationships in displays, and not the unique basic feature properties of individual items may be the main cause of Pop Out.

False Pop Out and Pattern-breaking Pop Out are converging evidence toward the Theory of Basic Gestalts as providing a more comprehensive explanation of Pop Out.

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