False Pop Out and Pattern-breaking Pop Out
Evidence of configural disruption in conventional pop out

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Theory of Basic Gestalts

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

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.

Grouping and False Pop Out (FPO)

A metric for FPO confirmed that low accuracies for Border targets was a result of increased FPO. When the square wasn’t clearly disrupted, the rectangle was.

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

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.

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.

References


