

## Introduction:

### Disconfirmatory strategy vs. confirmatory strategy

- In visual search, people typically seek to confirm an object's presence.
- Imagine searching a fruit tray for an apple you know is there. You might first try to "confirm" a red apple by searching through the red fruit. However, if the only red fruit you find are strawberries, you can *disconfirm* a red apple and infer that the apple must be green.

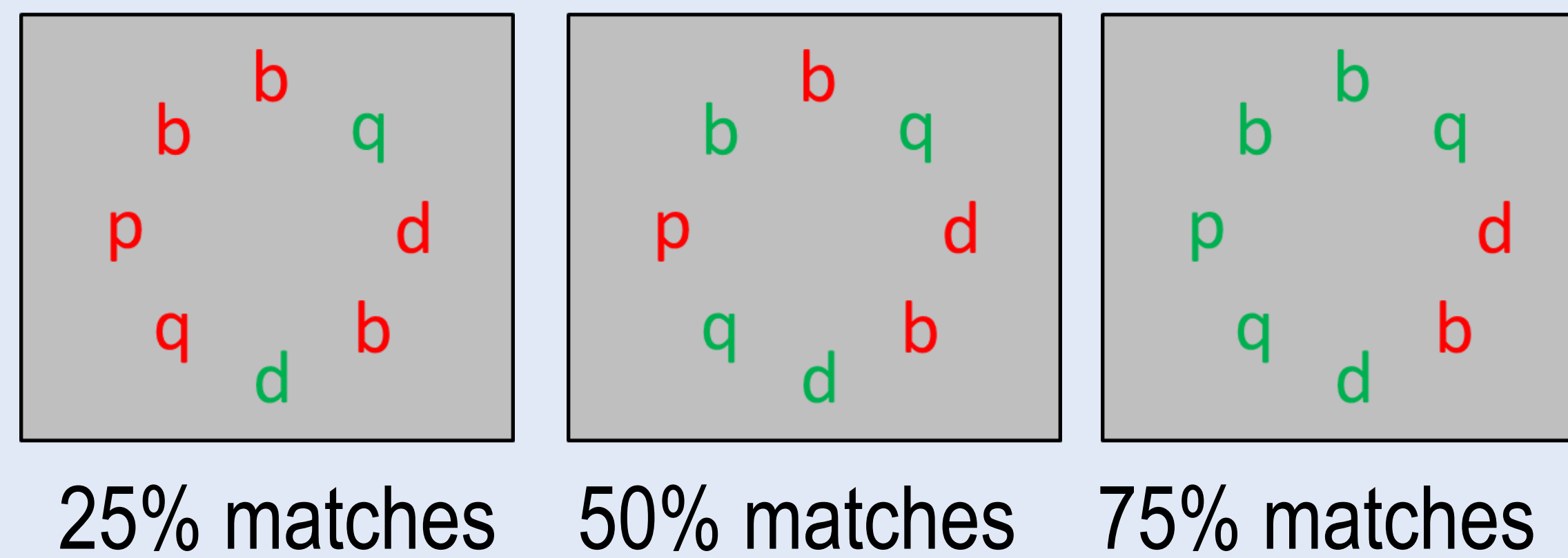
### Present Investigation:

- Although a disconfirmatory strategy is sometimes optimal, Rajsic, Wilson, & Pratt (2015) found that people stubbornly persist with a confirmatory strategy (i.e., primarily searching red things when cued with "red," even when red objects are more numerous than green, entailing laborious search).
- In addition to this visual "confirmation bias," another stubborn tendency in visual search is the low-prevalence effect, where rare items are missed disproportionately often (Wolfe et al., 2005). In the present investigation, some subjects rarely experienced targets that occurred in an initially cued color. Can this statistical learning counteract the effect of confirmation bias in search?

## Method

- Within Subjects:

**1. Template Color Match Proportion (TCMP):** number of displayed letters matching the initially cued "template" color: 25%, 50%, 75%



**2. Target Color (TC):** actual presented target color: match or mismatch

If template cue is green:

P

Template Match

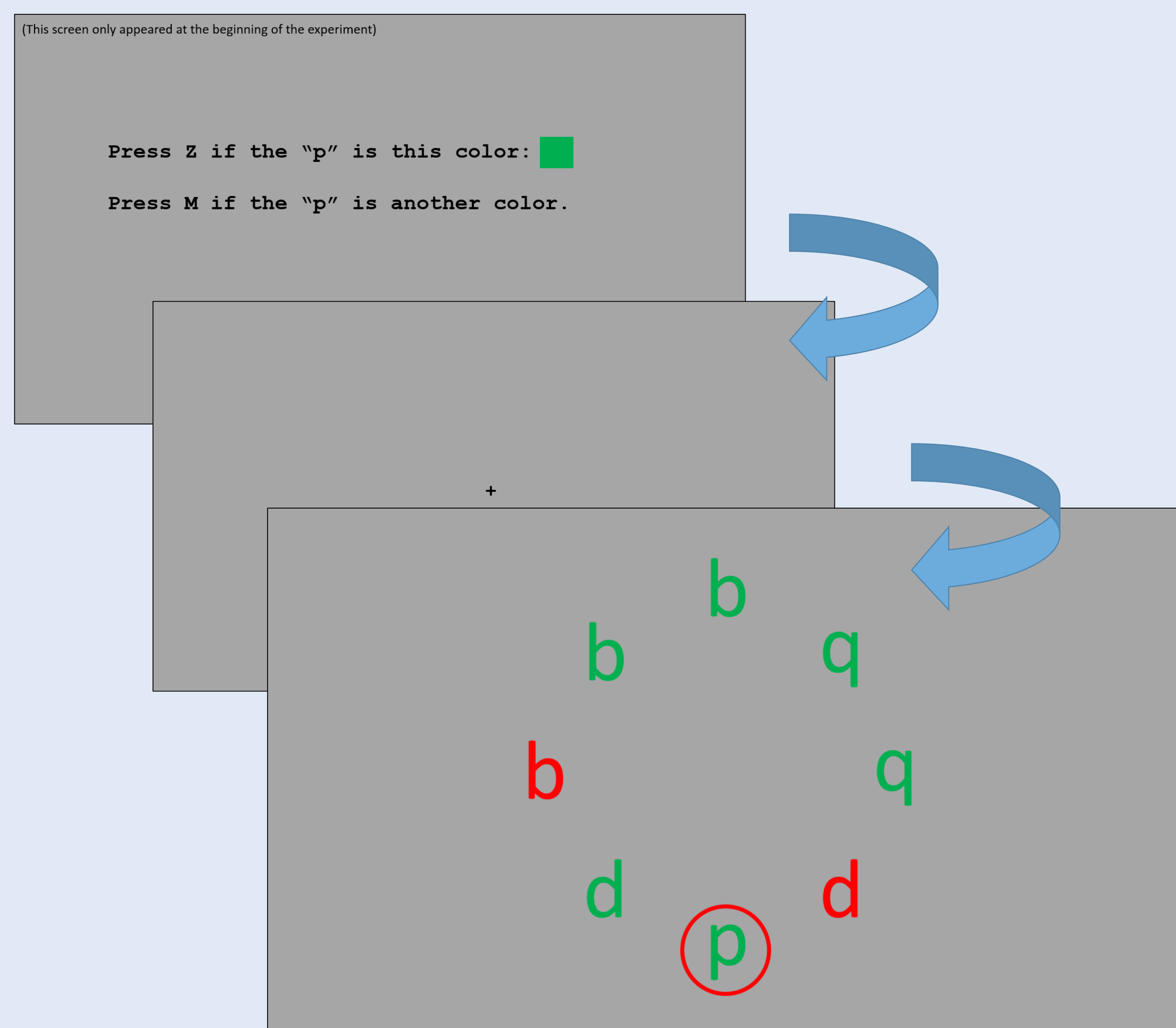
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Template Mismatch

- Between Subjects:

**Prevalence Group (PG):** Proportion of trials containing a template-matching target: **Balanced (50%), High (85%), Low (15%)**

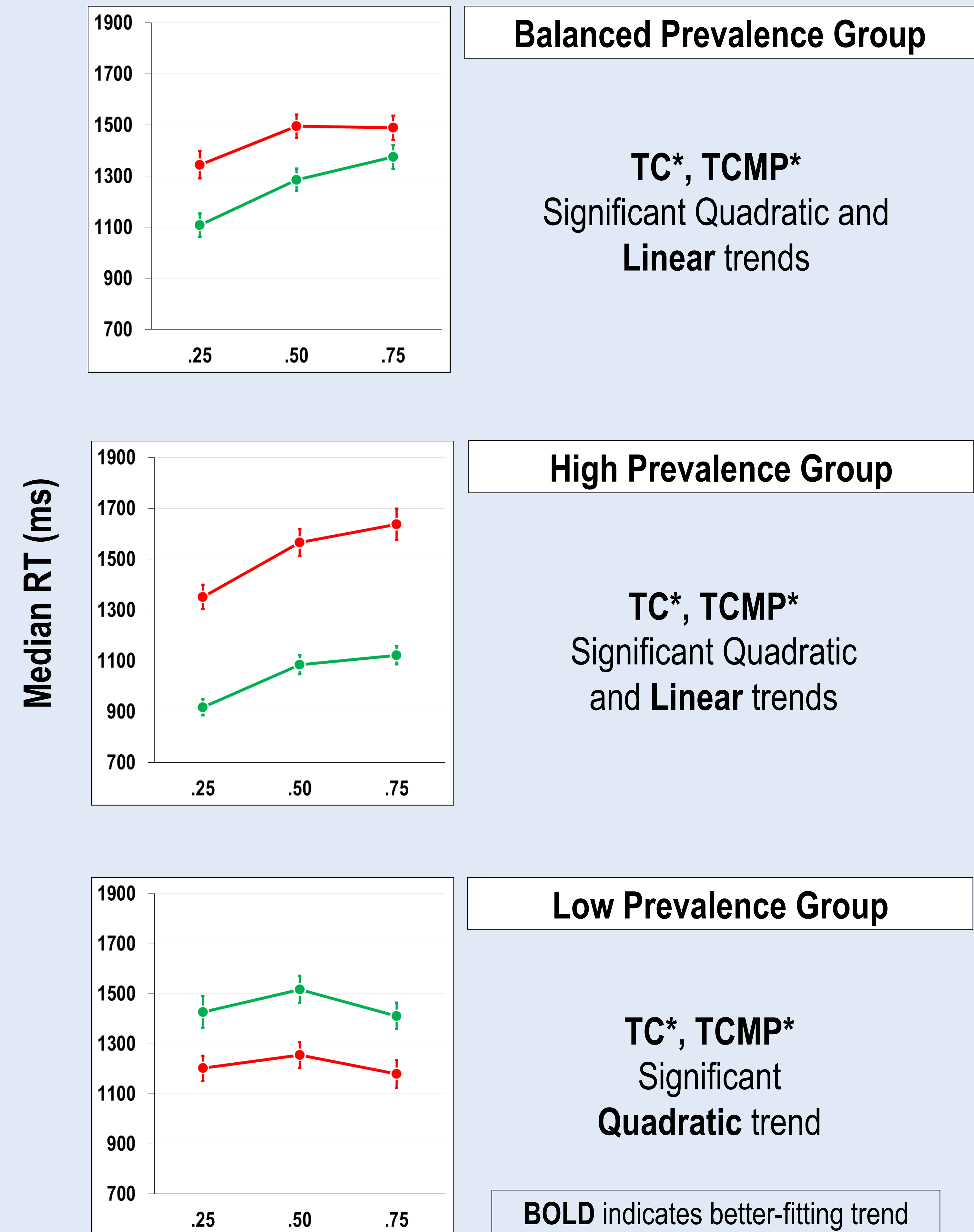
### Procedure:



## Results

- Template Match ● Template Mismatch

Overall significant effects ( $p < .05$ ): TC, TCMP, TC × PG, TCMP × PG



### Template Color Match Proportion

## Conclusions

- The stubborn, confirmatory strategy persisted in both High and Balanced Prevalence groups. In the Low Prevalence group, however, the quadratic ( $\cap$ -shaped) function suggests that subjects used a more flexible strategy.
- However, although subjects appear to be "flexible," this pattern in the Low Prevalence group is likely the product of two opposing forces: Confirmation bias and the low-prevalence effect. (1) The effect of prevalence was reduced relative to the High Prevalence group, suggesting that the confirmatory tendency counteracted prevalence learning. (2) The quadratic shape suggests that confirmatory tendencies were reduced, possibly as a product of prevalence learning.
- Further research using eye-tracking is necessary to isolate these opposing phenomena.



# References

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- Rajsic, J., Wilson, D. E., & Pratt, J. (2015). Confirmation bias in visual search. *Journal of Experimental Psychology: Human Perception and Performance*, 41(5), 1353-1364.
- Wolfe, J. M., Horowitz, T. S., & Kenner, N. M. (2005). Rare items often missed in visual searches. *Nature*, 435, 439-440.