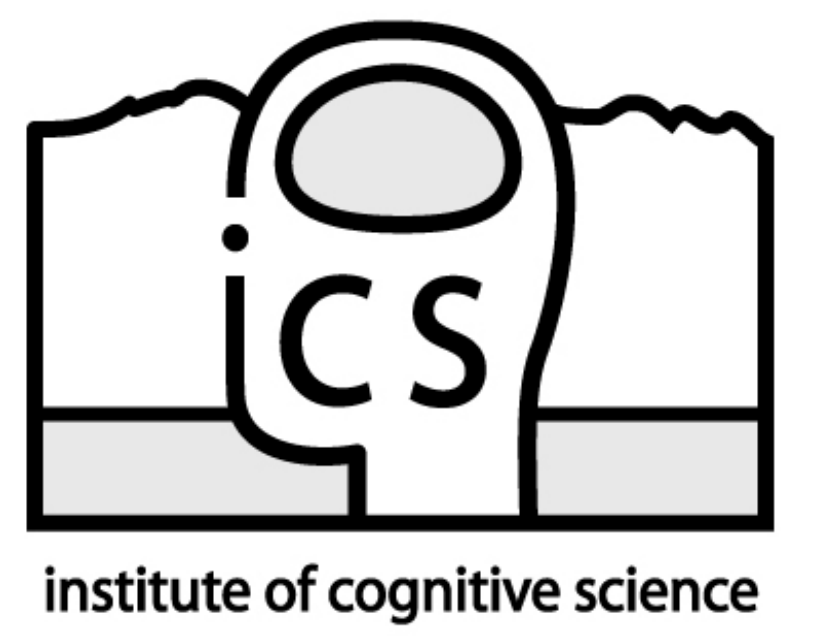




Language Influences Hue Perception

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Background

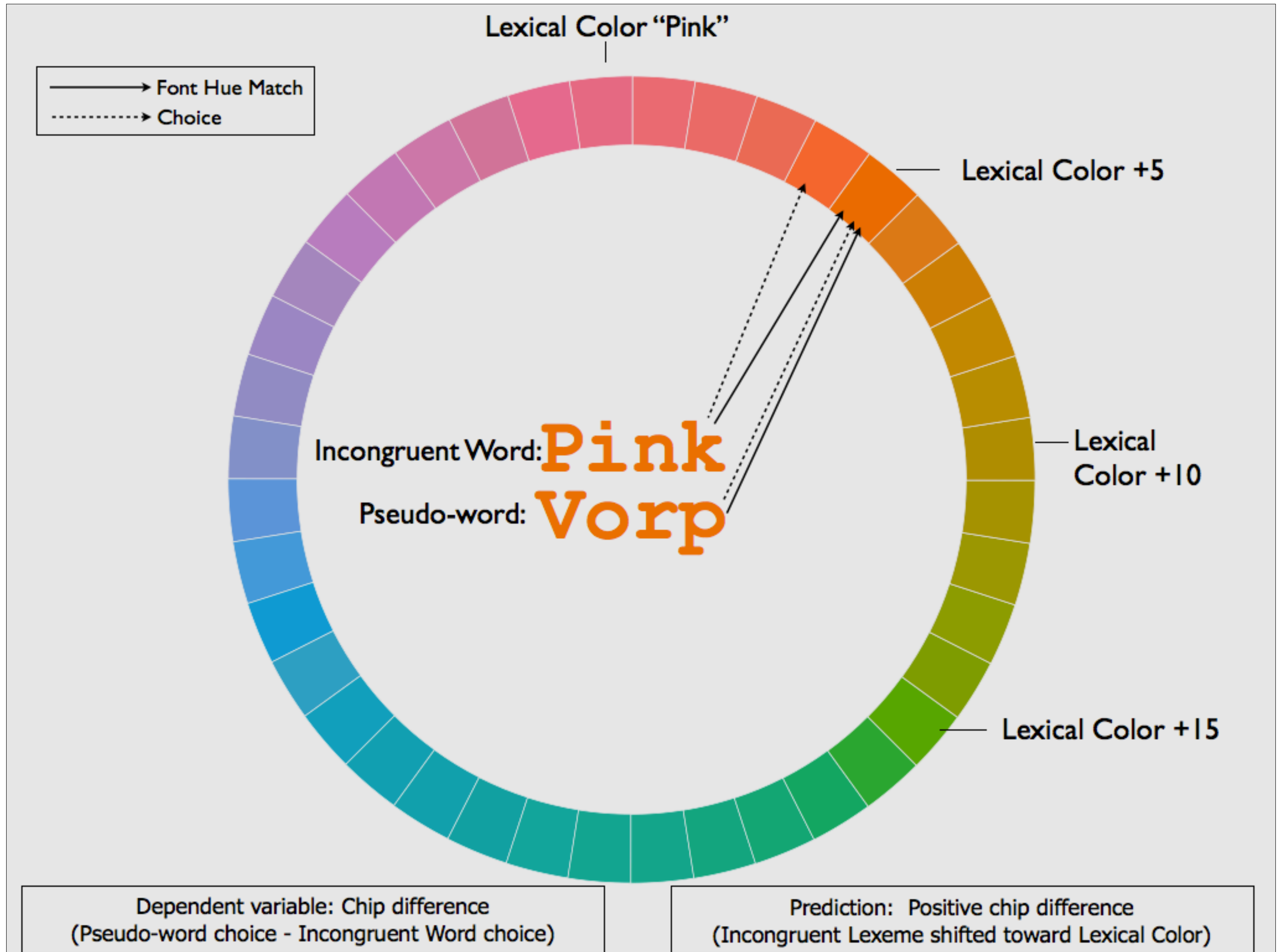
- Color words differ across languages, which may affect color perception
- People are faster to distinguish between two colors if there is a lexical distinction in their language (Thierry et al. 2009)
- Learned shape-color associations affect perceived hue (Goldstone 1995)
- Common shape-color associations affect perceived hue (Bruner et al. 1951)

Hypothesis

- Color categories in language will affect font hue perception in a simple judgment task
- Incongruence between lexical color and font hue (e.g., **red**) results in font hue judgment that is "pulled" toward the lexical color

Design

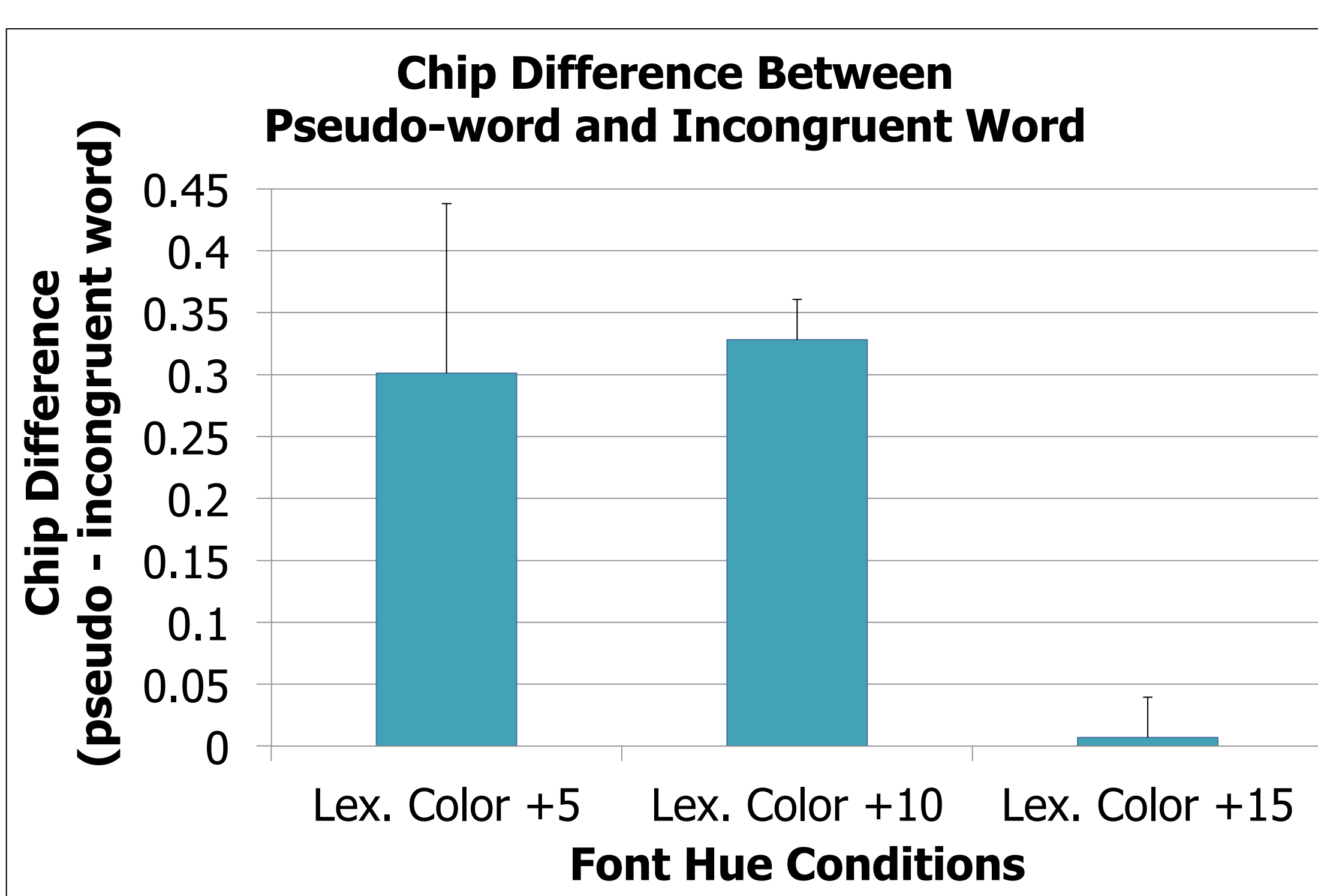
- 26 participants presented with incongruent color words, pseudo-words, and filler words
- Select font hue from surrounding color spectrum (40 hue chips)
- 6 spectrum wheels, varied in lightness, controlled for saturation, rotated randomly for each trial
- 204 trials (4 blocks), self-paced



Analysis

- Three font hue conditions: Lexical color +5, +10, +15
- Linear Regression: average within-subjects difference scores predicted by conditions (contrast coded for specific comparisons)
- Statistical Model:
Chip Diff. = $\beta_0 + \beta_1 5vs10 + \beta_2 5\&10vs15$
- Individual one-sample T-tests comparing average chip difference to 0

Results



- Hypothesis confirmed
- Positive chip difference $F(1,75)=7.3984, p < 0.05$
 - No difference between 5 and 10 chip condition $F(1,75)= 0.02; p = 0.89$
 - One-sample T-tests
5 chips: $t(25)= 2.19; p < .05$
10 chips: $t(25)= 2.46; p < .05$
 - Chip difference not significant for 15 chips $t(26)= 0.05; p=0.96$

Conclusions

- Font hue of incongruent words judged as closer to lexical color
- Simultaneous activation of visual color and lexical color alters the perception of font hue in real-time
- Effect depends on distance from lexical color
- Mechanism for Linguistic Relativity
 - Activation of language-specific color categories affects hue perception
 - Top-down knowledge influences bottom-up processes

References

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- Goldstone, R. L. (1995). Effects of categorization on color perception. *Psychological Science*, 6 (5), 298-304.
- Thierry, G., Athanasopoulos, P., Wigget, A., Dering, B., & Kuipers, J. (2009). Unconscious effects of language-specific terminology on preattentive color perception. *Proceedings of the National Academy of Sciences*, 106 (11), 4567-4570

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