DOES THE LIST LEVEL PROPORTION CONGRUENCY EFFECT CHANGE AS A FUNCTION OF SOA WHEN THERE IS AN ASSOCIATIVE LEARNING BIAS?

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Background

Proportion Congruency (PC) effect is demonstrated by a smaller Stroop interference for mostly-incongruent (MI) lists compared to mostly-congruent (MC) lists (Logan & Zbrodoff, 1979). Starting with the inception of the Item-Specific Proportion Congruency (ISPC) manipulation, in which proportion-congruency of "Stroop items" were contrasted, there is a continuing debate on whether PC effects are actually ISPC effects in disguise (Jacoby et al., 2003; Schmidt & Besner, 2008, Hutchison, 2011; Bugg, 2013).

Previously we investigated the time course of the ISPC effect by manipulating the stimulus onset asynchrony (SOA) between the color and the word dimensions (see Figure 1). We observed that when the word followed the color with a 200 ms delay, the ISPC effect was smaller than the ISPC effects observed for other SOA conditions (Atalay and Misirlisoy, 2014; 2015, see Figure 2). This result was replicated with several stimulus organizations inducing an ISPC effect. Therefore, we concluded that **ISPC effect was not observed if the word comes too late**.

Objective: The present study aims to investigate **the time course of the PC effect**. We hypothesized that if a PC effect is actually an ISPC effect in disguise, then the interaction between SOA and PC effect would be similar to that observed with the SOA and PC effect, in other words, **PC effect would not be observed if the word comes too late**.

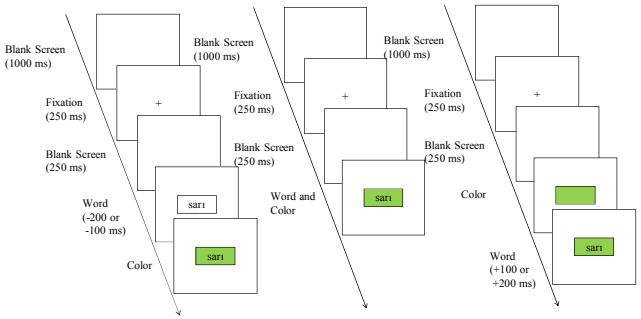

Figure 1. The SOA manipulation.

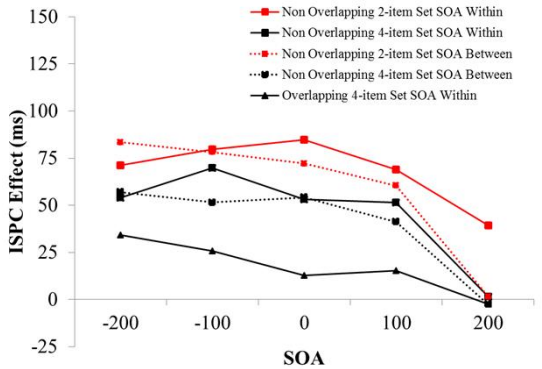

Figure 2. SOA x ISPC effect interaction observed in previous studies.

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Design, Results and Conclusion

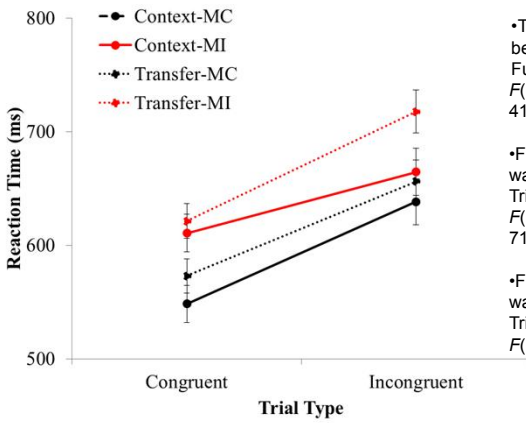
Table 1. The arrangement of stimuli.

		COLOR						
		Context Items				Transfer Items		
		gri	kırmızı	mavi	mor	pembe	sarı	turuncu	yeşil
MC CONTEXT	gri	90	30						
	kırmızı	30	90						
	mavi			90	30				
	mor			30	90				
	pembe					15	15		
	sarı					15	15		
	turuncu							15	15
	yeşil							15	15
WORD									
		COLOR						
		Context Items				Transfer Items		
		gri	kırmızı	mavi	mor	pembe	sarı	turuncu	yeşil
MI CONTEXT	gri	30	90						
	kırmızı	90	30						
	mavi			30	90				
	mor			90	30				
	pembe					15	15		
	sarı					15	15		
	turuncu							15	15
	yeşil							15	15
WORD									

The arrangement of stimuli was similar to Bugg (2013) Experiment 2a.

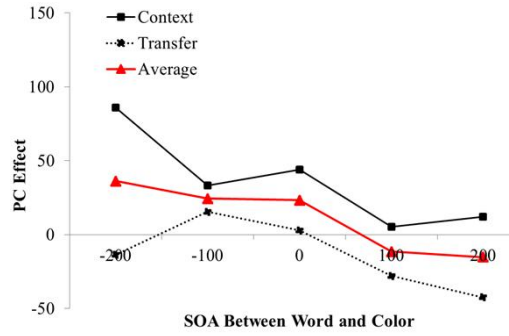
Design: Mixed factorial ANOVA with Trial Type (congruent, incongruent), Trial Function (context vs. transfer) as within-subject factors and PC (MC, MI), SOA (-200 ms, -100 ms, 0 ms, +100 ms, and +200 ms) as between-subjects factors.

Participants: Forty-six university students, randomly assigned in one of the experimental conditions participated to the experiment in exchange of a course credit.



- The three-way interaction between Trial Type, Trial Function and PC $F(1, 36) = 16.25$, $MSE = 414.65$, $p < .001$, $\eta_p^2 = .31$
- For context trials, the two-way interaction between Trial Type and PC $F(1, 36) = 10.05$, $MSE = 716.88$, $p < .005$, $\eta_p^2 = .22$
- For transfer trials, the two-way interaction between Trial Type and PC $F(1, 36) < 1$

Figure 3. Trial Type x Trial Function x PC.



- The three-way interaction between Trial Type, PC and SOA $F(1, 36) < 1$
- For context trials, the three-way interaction between Trial Type, PC and SOA $F(1, 36) = 1.55$, $p = .35$
- For transfer trials, the three-way interaction between Trial Type, PC and SOA $F(1, 36) < 1$

Figure 4. SOA x PC interaction.

Conclusion: The interaction between PC and SOA produced a different pattern than the interaction between ISPC and SOA that was observed in the previous studies. These results suggest that there might be more to the PC effect than that is explained by the ISPC effect.

References

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