Supporting Information

Boy et al. 10.1073/pnas.1001925107

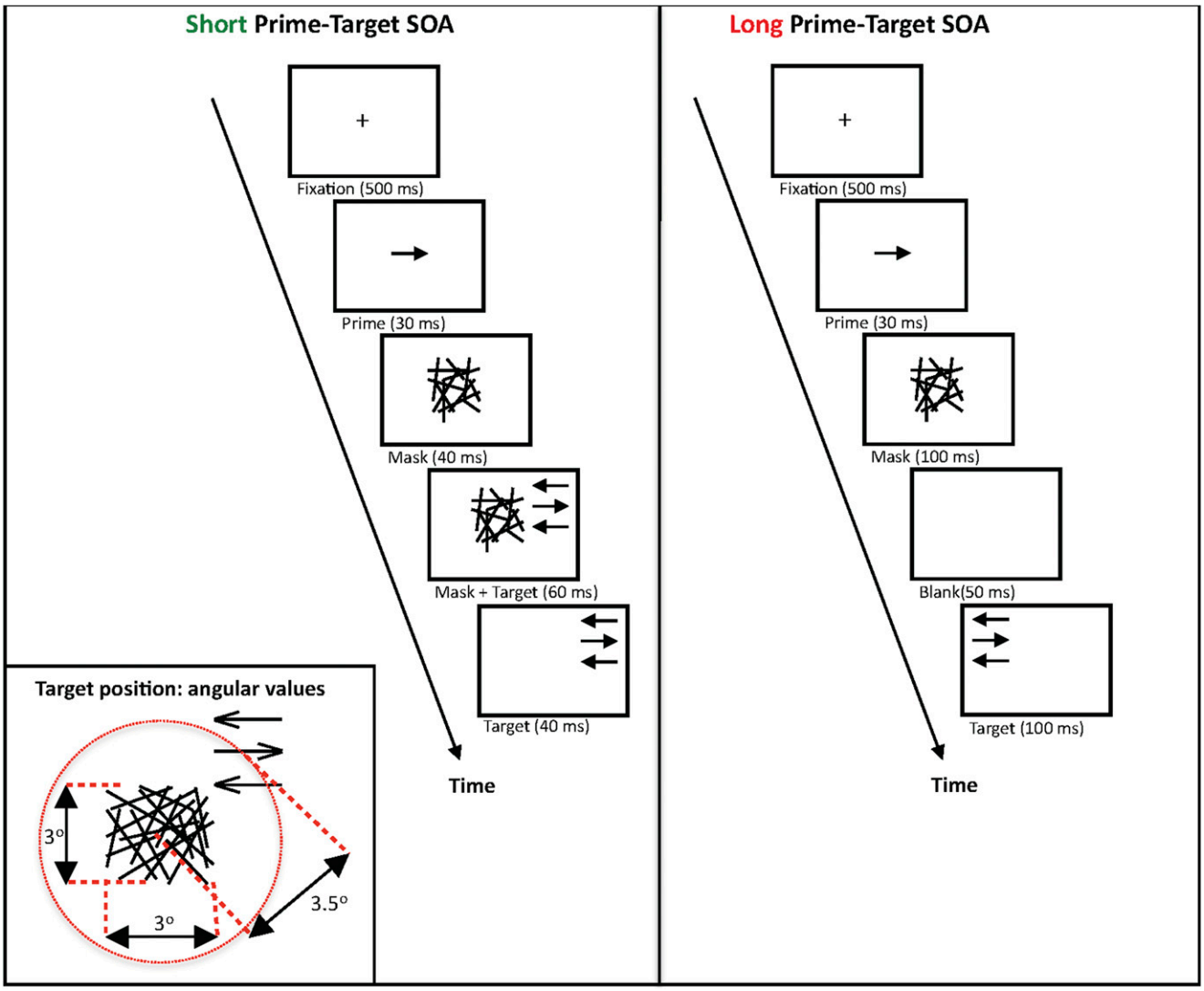

Fig. S1. Schematic illustration of the two types of display used for short (*Left*) and long prime target stimulus onset asynchrony (SOA; *Right*). The exact relative layout of the mask and targets is shown in the *Left* corner.

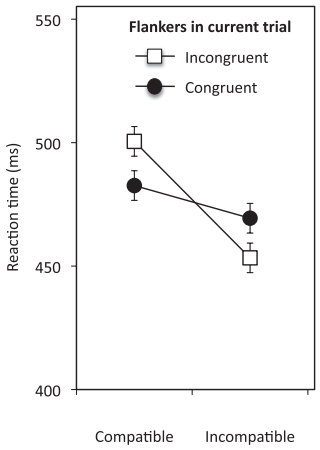

Fig. S2. This supplementary experiment used the longer SOA to produce negative compatibility effects (NCEs), and the stimuli were double arrowheads (>> and <<) presented at fixation. These stimuli are those most often used for studies of the NCE and also, often used for flanker experiments. Although the flanker effect itself was hardly apparent when averaged across priming conditions, there was still a robust interaction between flanker congruence and the NCE [$F(1, 7) = 13.5$; $P < 0.008$; $\eta^2_p = 0.66$].

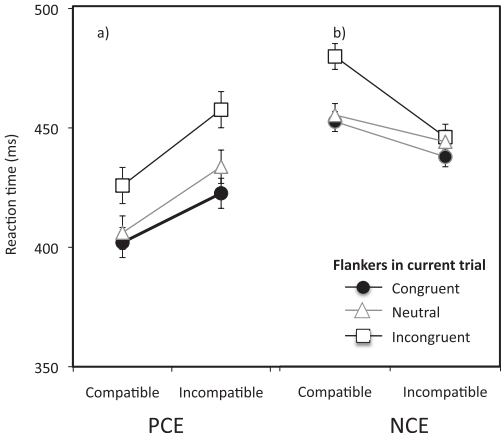

Fig. S3. This supplementary experiment used both SOAs and included trials with neutral flankers (lines with a central bar instead of a directional arrowhead). Flanker effects (vertical displacement of lines) and priming effects (slope of lines) were all present as expected [flanker effect for positive compatibility effect (PCE) and NCE conditions, respectively: $F(2, 14) = 8.5$; $P < 0.004$; $\eta^2_p = 0.54$; $F(2, 22) = 19.5$; $P < 0.001$; $\eta^2_p = 0.64$; priming effects for PCE and NCE conditions, respectively: $F(1, 11) = 12.7$; $P < 0.009$; $\eta^2_p = 0.86$; $F(1, 11) = 40$; $P < 0.001$; $\eta^2_p = 0.78$]. There was no interaction of flanker interference and priming for the PCE [$F(2, 22) = 1.8$], but there was for the NCE [$F(2, 22) = 13.8$; $P < 0.001$; $\eta^2_p = 0.56$]. Results for the neutral primes show first that the flanker effect is mainly a slowing by incongruent flankers rather than a speeding by congruent flankers. More importantly, results for neutral and incongruent flankers are clearly parallel (additive) for positive priming but not for the NCE, whereas congruent flankers remain similar to neutral flankers throughout. Thus, the interaction between NCE and flanker interference stems from the incongruent flanker condition [$F(1, 7) = 13.5$; $P < 0.008$; $\eta^2_p = 0.66$].

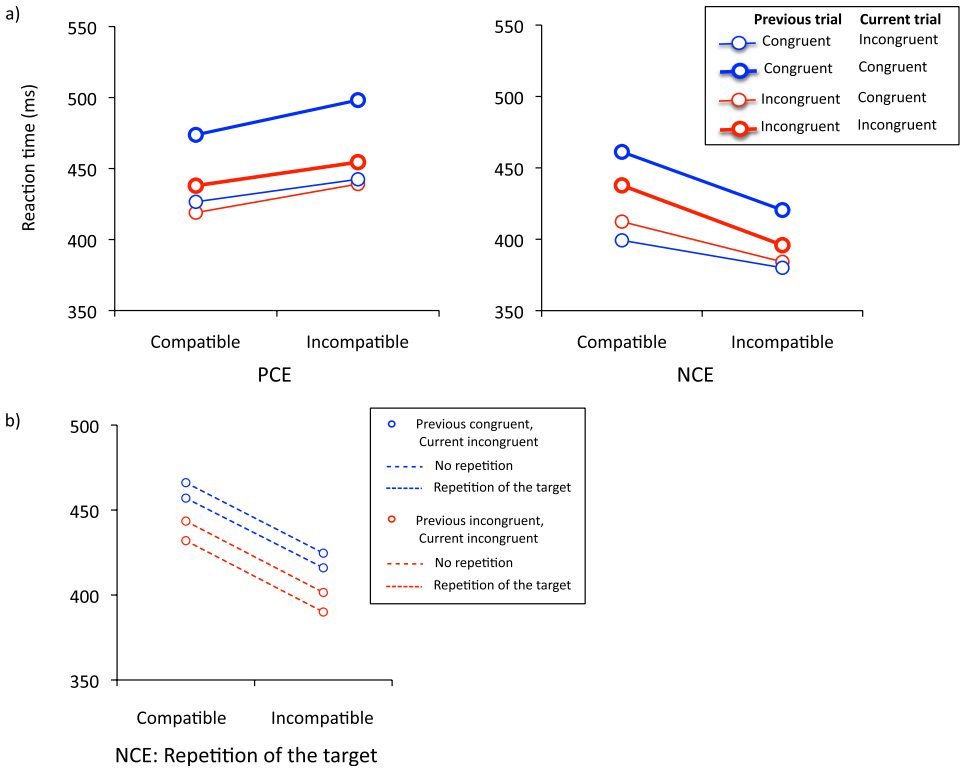

Fig. S4. Full data plots for the previous trial effect. The slope of each line is the priming effect PCE or NCE. The flanker-interference effect is smaller when the previous trial was incongruent (the displacement between red lines) than when the previous trial was congruent (displacement between blue lines). This is the previous trial effect, and it is present regardless of whether there was a repetition of the target stimulus between trials or a change of target stimulus (*B* expands the crucial incongruent flanker conditions that are bold in *A* into target repeat and target change trials). Crucially, the previous trial effect does not interact with the NCE and does not affect the interaction between NCE and current flanker conflict—especially in the critical condition of incongruent flankers and NCE (*B* and bold lines in *A*).

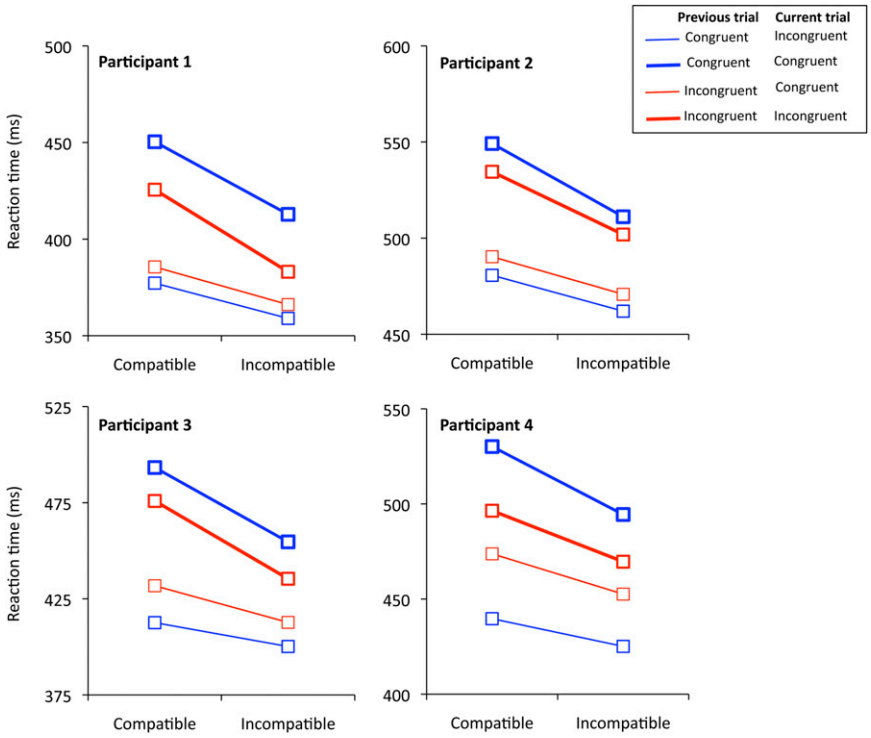

Fig. S5. Investigating the previous trial effect with a psychophysical approach (1,200 trials with four participants; NCE conditions only) confirmed the above results. In all participants, the previous trial effect was strong (compare displacement between red lines with that between blue lines) but entirely additive with the interaction of NCE and current flanker interference. This was also true regardless of whether there was a repetition of the target stimulus between trials or not (for all, $T < 1.6$ and $P > 0.125$ for the four participants).