

Supplemental Figure Legends

Supplemental Figure 1. Latency distributions for unsuccessful direct change trials (red) and successful direct change trials (black) obtained in the scanner based on a mean of 81 observations per subject (std = 2.71). For each subject the distributions are significantly different on a two-sample Kolmogorov-Smirnov test at $p=0.05$ (asymptotic p values given in plots). These results are consistent with the outcome on each trial being decided by a race between the two competing processes. The overall probability of successfully changing direction is also given for each subject.

Supplemental Figure 2. Inhibition functions for each subject showing the relation between changing plan and change signal delay in the scanner. The probability of successfully changing direction is plotted as a function of the reaction time on each trial adjusted for the SOA (effectively the time the subject had to change direction). The data have been distributed in 50ms bins (to match the 50ms step size of the SOA tracking algorithm), and uninformative values (latencies shorter than the slowest 0% bin and longer than the shortest 100% bin) have been removed. Logistic functions were fitted to the data using `psignifit` toolbox version 2.5.41 for Matlab (see <http://bootstrap-software.org/psignifit/>) which implements the maximum-likelihood method described by Wichmann & Hill, 2001a[1]. Confidence intervals were found by the bias-corrected accelerated bootstrap method implemented by `psignifit`, based on 4999 simulations (see Wichmann & Hill, 2001b[2]). Error bars correspond to ± 1 standard deviation (dark blue) and ± 2 standard deviations (light blue). Each plot is based on a mean of 62 observations (std=10.6). Note that since the adaptive staircase targeted the 50% performance level there were relatively few observations at the extremes of the functions and reliable slope estimates are therefore difficult to obtain.

Supplemental Figure 3. Latency distributions obtained in the scanner subdivided by choice (blue: directed, green: free) and conflict (solid: no change, dashed: change). An average of 322 saccades per subject is included (std=11.5). At the group level, there was no significant main effect of choice ($p = 0.09$) or conflict ($p = 0.57$) on Friedman's test. The proportion of left saccades on free trials for each subject is shown in green. The mean proportion of left responses was 51.2% (sem = 2.4).

Supplemental References

1. Wichmann, F.A., and Hill, N.J. (2001). The psychometric function: I. Fitting, sampling, and goodness of fit. *Percept Psychophys* 63, 1293-1313.
2. Wichmann, F.A., and Hill, N.J. (2001). The psychometric function: II. Bootstrap-based confidence intervals and sampling. *Percept Psychophys* 63, 1314-1329.





