Anomalous Use of Context During Task Preparation in Schizophrenia: A Magnetoencephalography Study

Supplemental Information

Trial Exclusions for MEG Analysis

As in our prior report (1), we excluded trials with no response, those that were unscorable due to a noisy electrooculogram (EOG) signal, trials with latencies under 130 or over 800 ms, and trials preceded by an error. The cutoff of 130 ms excluded anticipatory saccades, which are not true responses to the appearance of the stimulus (2-4). The rationale for excluding trials preceded by an error is that errors initiate evaluative and corrective processes that affect neural activity and behavior (e.g., post-error slowing) in the subsequent trial and these effects differ for patients and controls (e.g., 5). Trials with eye-blinks (defined as vertical peak-to-peak EOG amplitude exceeding 200 μV) or losses of fixation during the baseline period or prior to the saccadic response were excluded from analysis. After exclusion, there were an average of 139 $\pm$ 71 prosaccades and 129 $\pm$ 72 antisaccades available for MEG analysis for each patient and 201 $\pm$ 38 prosaccades; 196 $\pm$ 45 antisaccades available for controls.

Table S1. Breakdown of trial exclusions for MEG analysis.

	Controls				**Patients**			
	Prosaccade		Antisaccade		Prosaccade		Antisaccade	
	#	%	#	%	#	%	#	%
Blinks +	37	13	37	13	82	30	79	28
Loss of Fixation	7	3	6	2	23	8	20	7
Preceded by Error	23	8	19	7	23	8	13	5
Usable Errors	10	4	27	10	11	4	44	15
Usable Correct	201	72	196	69	139	50	129	45

There were a total of 278 prosaccades and 285 antisaccades in the experiment. Latency and error rate analyses included all scorable trials, regardless of blinks, losses of fixation, or prior errors. The 'Blinks +' category includes blinks, trials with response latencies <130 ms and >800 ms, trials with no response, and unscorable trials. Patients had fewer usable trials due to their higher error rate, increased difficulty adhering to the instruction not to blink, and, as we have reported previously (6), higher rate of fixation losses than controls.

Bootstrapping Analyses

These analyses consisted of four steps: 1) generating a normalized difference score distribution for each group by using 10,000 bootstrap samples through random draws with replacements in each group (n = 25 for the patient group and n = 18 for the control group); 2) constructing the receiver operating characteristic (ROC) curve by using the two distributions generated by the above bootstrapping procedure from each group; 3) calculating the area under the ROC curve, which provides a model-free, unbiased estimation of overlap between the groups; 4) computing the p-value of the ROC area value by comparing it with a null-hypothesis distribution of the ROC area value, generated by repeating the procedure 10,000 times as described in the above 3 steps except that in step 1, the group assignment is randomly assigned.

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