Data Supplement

Expanded Results

Event-related potential data

Trials including excessive EEG artifacts, anticipatory (< 100 ms) or slow responses were excluded from ERP analysis. Supplemental Table 1 displays the total number of trials that were removed in each group. Groups did not differ in the number of rejected trials.

Behavioral results

Every 60 trials participants received a feedback based on their previous performance. Supplemental Table 2 presents the mean percentage (and standard deviation) of feedbacks received in the three groups.

Difference waveforms

An additional repeated-measurement analysis of variance was used to examine difference waveforms that were obtained by subtracting the signal on correct trials from the signal on erroneous trials. These waveforms were analyzed using *electrode* as within-subject and *group* as between-subject factor. A significant main effect of *electrode* was observed (F=83,99, df=2,174, p<0.001, ε=0.61). The difference was largest at Cz compared to Fz and FCz, that did not differ. Groups differed in difference waveforms (F=3,15, df=2,87; p<0.05). Patients and relatives showed greater difference waveforms than comparison subjects but this difference did not reach significance (patients vs. comparison subjects: p=0.07, relatives vs. comparison subjects: p=0.13). This smaller group effect seen in the difference waves compared to the analyses of original waveforms is due to the fact that both error-related

negativity and (to a lesser extend) correct-related negativity amplitudes were increased in OCD patients and relatives.
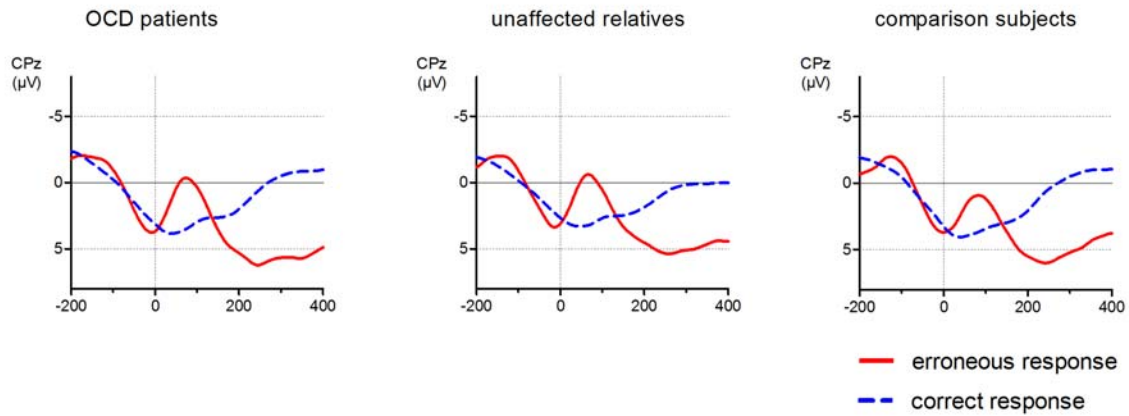
Error positivity

The error positivity was determined as mean amplitude in the time windows 300-500 ms post-response and was compared between groups with an analysis of variance including the within-subject factors *electrode* (CPz vs. Pz) and *response type* (correct vs. incorrect). Averaged waveforms for correct and incorrect responses at a parietal electrode site (CPz) are displayed in the supplemental Figure 1. The error positivity was larger for incorrect than for correct responses (F=299.33, df=1,87, p<0.01) and this difference was more pronounced at CPz (F=8.24, df=2,87, p<0.01). A trend-like interaction between group and response type was also found (F=2.49, df=2,87, p=0.09). This trend is due to a numerically but nonsignificant greater difference between incorrect and correct responses in the patients group compared to unaffected relatives and comparison subjects (p-values>0.25).

Correlation results

Supplemental Table 3 presents correlations of error-related negativity amplitudes with symptom scores and behavioral measures, separately for the three groups.

Supplemental Tables and Figures

Supplemental Figure 1: Response-locked grand average waveforms for OCD patients (left), unaffected first-degree relatives (middle) and healthy comparison subjects (right), recorded at CPz, for correct and erroneous responses.

Supplemental Table 1: Number of rejected trials based on reaction time criteria or due to EEG artifacts as a function of group.

	OCD patients (N=30)	First-degree relatives (N=30)	Comparison subjects (N=30)
Trials (n) rejected due to			
EEG-artifacts	1497	1341	2037
Reaction times below 100 ms	7	3	13
Reaction times over 700 ms	40	60	76
No reactions	162	118	128

Supplemental Table 2: Percentage of specific feedback types received, separately for groups.

	OCD patients (N=30)		First-degree relatives (N=30)		Comparison subjects (N=30)	
Feedback	Mean	SD	Mean	SD	Mean	SD
Respond faster	79	19	80	22	63	25
Respond fast and accurate	20	20	18	18	33	24
Respond more accurately	1	3	2	8	5	9

Supplemental Table 3: Pearson's r coefficients for correlations of error-related negativity amplitudes at FCz with clinical and performance measures, separately for OCD patients, unaffected first-degree relatives and healthy comparison subjects.

Measures	OCD Patients (N=30)		First-degree relatives (N=30)		Comparison subjects (N=30)	
	r	p	r	p	r	p
Clinical						
Obsessive-Compulsive Inventory-Revised	-0.16	0.41	0.15	0.43	0.12	0.52
washing	-0.35	0.06	0.16	0.38	0.26	0.18
checking	0.22	0.24	0.27	0.15	-0.13	0.49
ordering	0.04	0.85	0.03	0.87	0.11	0.57
obsessing	-0.13	0.48	0.06	0.74	0.11	0.56
hoarding	-0.03	0.88	0.03	0.87	0.23	0.23
neutralizing	-0.34	0.07	0.07	0.71	-0.20	0.29
Beck-Depression-Inventory II	0.17	0.37	0.22	0.24	0.06	0.76
Yale-Brown Obsessive-Compulsive Scale	-0.32	0.09	-	-	-	-
Montgomery-Åsberg Depression Rating Scale	0.07	0.72	-	-	-	-
Task Performance						
Number of Errors	0.27	0.15	-0.25	0.18	0.11	0.57
Error Reaction Time (ms)	0.19	0.31	0.26	0.16	-0.08	0.66

Note: reported p-values are uncorrected for multiple comparisons