**A close up of a map

Description automatically generated**

**Figure S1.** Number of correct and error trials from each condition of the antisaccade task in 10-ms latency bins (Schizophrenia (SZ); schizoaffective disorder (SAD); bipolar I with psychosis (BDP); healthy comparisons (HC)). For all groups, correct and error trials show relatively normal distributions, where at intermediate latencies (around 200-300ms) both correct and error responses occur at similar likelihood. However, average latency for error responses is shorter than average latency for correct antisaccades in all groups. See Figure 2 for group averages.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Gap** | **SZ** | | **SAD** | | **BDP** | | **HC** | |
| **Optimal Performance**  **(% error)** | **15.3** | | **13.1** | | **13.1** | | **5.76** | |
| SE | 1.02 | | 0.67 | | 1.32 | | 0.76 | |
| 95% Confidence (lower/upper) | 13.27 | 17.28 | 11.76 | 14.42 | 10.5 | 15.7 | 4.94 | 6.57 |
| **Tradeoff Rate**  **(% error / ms)** | **0.0421** | | **0.0373** | | **0.0494** | | **0.05** | |
| SE | 0.003 | | 0.0018 | | 0.0047 | | 0.0017 | |
| 95% Confidence (lower/upper) | 0.035 | 0.049 | 0.034 | 0.041 | 0.04 | 0.059 | 0.047 | 0.053 |
| **Time to 50% Correct**  **(ms)** | **210.5** | | **212.8** | | **192.1** | | **185.6** | |
| SE | 2.16 | | 1.48 | | 2.24 | | 0.76 | |
| 95% Confidence (lower/upper) | 206.2 | 214.7 | 209.9 | 215.8 | 187.7 | 196.5 | 184.1 | 187.1 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Overlap** | **SZ** | | **SAD** | | **BDP** | | **HC** | |
| **Optimal Performance**  **(% error)** | **11.1** | | **11.0** | | **11.5** | | **5.52** | |
| SE | 0.62 | | 0.63 | | 0.77 | | 0.41 | |
| 95% Confidence (lower/upper) | 9.86 | 12.3 | 9.76 | 12.23 | 9.97 | 13.02 | 4.71 | 6.33 |
| **Tradeoff Rate**  **(% error / ms)** | **0.0265** | | **0.0254** | | **0.0342** | | **0.035** | |
| SE | 0.001 | | 0.001 | | 0.0017 | | 0.001 | |
| 95% Confidence (lower/upper) | 0.025 | 0.028 | 0.024 | 0.027 | 0.031 | 0.38 | 0.032 | 0.037 |
| **Time to 50% Correct**  **(ms)** | **239.7** | | **237.5** | | **214.9** | | **207.8** | |
| SE | 1.62 | | 1.62 | | 1.73 | | 0.90 | |
| 95% Confidence (lower/upper) | 236.5 | 242.8 | 234.3 | 240.7 | 211.5 | 218.3 | 206.0 | 209.6 |

**Table S1.** Parameter estimates for speed-performance tradeoff functions (schizophrenia (SZ); schizoaffective disorder (SAD); bipolar I with psychosis (BDP); healthy comparisons (HC)). Optimal performance: lower asymptote of the speed-performance function, indicating the minimum amount of error achievable by prolonging latency. Tradeoff rate: steepest slope of the speed-performance function. Time to 50%: x-intercept (latency in msec) where the maximum tradeoff rate occurs on the speed-performance function. SAD showed the lowest tradeoff rate in both conditions. Gap showed faster tradeoff rate than overlap in all groups. All functions accounted for 95% or more of each group’s total variance. For visualization, see Figure 4.

|  |  |
| --- | --- |
|  | **Correlation with Canonical Variate** |
| **Saccade Variables** |  |
| Antisaccade % error (gap) | 0.95 |
| Antisaccade % error (overlap) | 0.85 |
| Antisaccade correct latency (overlap) | 0.56 |
| Antisaccade correct latency (gap) | 0.47 |
|  |  |
| **BACS subscales** |  |
| Verbal memory | -0.89 |
| Verbal Fluency | -0.80 |
| Token motor | 0.21 |
| Symbol coding | -0.11 |
| Tower of London | 0.06 |
| Digit sequencing | -0.03 |

**Table S2.**  Correlations between saccade variables/BACS subscales included in the canonical correlation analysis (CCA) and their corresponding outcome variates.

|  |  |
| --- | --- |
|  | **Correlation with Canonical Variate** |
| **Saccade Variables** |  |
| Antisaccade correct latency (overlap) | 0.87 |
| Antisaccade correct latency (gap) | 0.66 |
| Antisaccade % error (gap) | 0.65 |
| Antisaccade % error (overlap) | 0.38 |
|  |  |
| **Clinical Scales** |  |
| Birchwood Social Functioning | -0.77 |
| PANSS negative | 0.68 |
| PANSS general | 0.41 |
| PANSS positive | 0.23 |
| MADRS | -0.11 |
| YMRS | -0.01 |

**Table S3.** Correlations between saccade and clinical variables included in the canonical correlation analysis (CCA) and their corresponding outcome variates. MADRS: Montgomery Asberg Depression Rating Scale. YMRS: Young Mania Rating Scale. GAF: Global Assessment of Functioning (part of SCID-VI).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **HC** | **SZ** | **SAD** | **BDP** |
| **B-SNIP2** | **Prosaccade Latency** |  |  |  |  |
| Gap | **159.7** (28.8) | **163.6** (32.0) | **165.8** (33.5) | **159.5** (32.4) |
| Synchronous | **181.4** (30.2) | **190.2** (33.6) | **194.9** (36.3) | **183.8** (31.4) |
| Overlap | **207.0** (42.0) | **214.6** (52.4) | **223.0** (57.0) | **206.0** (47.1) |
| **Antisaccade Correct Latency** |  |  |  |  |
| Gap | **305.2** (57.9) | **334.1** (84.8) | **327.5** (77.4) | **324.4** (93.0) |
| Overlap | **361.3** (67.8) | **400.7** (86.0) | **386.3** (92.6) | **377.8** (103.5) |
| **Antisaccade Error Latency** |  |  |  |  |
| Gap | **190.6** (45.3) | **183.7** (40.5) | **187.7** (40.1) | **183.5** (38.9) |
| Overlap | **229.0** (58.9) | **222.5** (53.2) | **227.3** (57.8) | **222.1** (46.0) |
| **Antisaccade % Error** |  |  |  |  |
| Gap | **25.2** (22.0) | **50.8** (26.5) | **49.5** (27.5) | **35.1** (27.3) |
| Overlap | **23.2** (18.4) | **43.9** (25.1) | **42.5** (25.1) | **32.1** (22.2) |
|  |  |  |  |  |  |
| **B-SNIP1** | **Prosaccade Latency** |  |  |  |  |
| Gap | **167.8** (29.3) | **160.6** (31.8) | **169.3** (37.2) | **165.9** (30.0) |
| Synchronous | **197.5** (29.9) | **193.5** (32.6) | **199.2** (36.3) | **197.8** (31.7) |
| Overlap | **231.5** (43.3) | **220.1** (47.1) | **229.0** (51.9) | **225.5** (46.9) |
| **Antisaccade Correct Latency** |  |  |  |  |
| Overlap | **378.5** (59.6) | **410.8** (86.8) | **412.0** (82.1) | **392.5** (72.1) |
| **Antisaccade Error Latency** |  |  |  |  |
| Overlap | **257.4** (63.9) | **247.2** (65.3) | **253.5** (69.5) | **255.1** (71.5) |
| **Antisaccade % Error** |  |  |  |  |
| Overlap | **18.4** (12.5) | **44.1** (25.8) | **35.0** (22.8) | **31.8** (21.6) |
|  |  |  |  |  |  |

**Table S4.** Raw mean (and standard deviation) values for antisaccade and prosaccade outcomes by group and fixation offset condition in B-SNIP1 and B-SNIP2.