Supplementary information

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1. Supplementary analyses

In our supplementary analyses a p- value<0.002 was considered significant after corrected for multiple testing (p=0.05/ number of separate analyses performed in this section (n=24). All statistical analyses were conducted in R version 3.6. (https://www.r-project.org, R Core Team, 2014) and figures were produced using the ggplot2 package implemented in R (Wickham, 2009).

1.1. Correlation between P100 amplitude and V1 structure (surface area and cortical thickness) in the total outlier-pruned sample

Here, we aimed to assess whether the correlation between P100 amplitude and the total V1 SA in a total sample including healthy individuals and patients was similar to what we observed in the main analyses (2.3.2.1.). We performed Pearson correlation analyses in a total sample (n=382) including healthy individuals (n=307) and patients (n=75) with SCZ spectrum (n=30) and BD (n=45). Prior to running the analyses, we adjusted for the effect of age, sex, eTIV, diagnosis and Euler number on total V1 surface area, and for effects of age, sex, diagnosis and standard error for P100 amplitude on P100 amplitude. Further, we repeated correlation test between the P100 amplitude and the V1 thickness (corrected for effects of age, sex, eTIV, diagnosis and Euler number) in the total sample.

1.2. Correlation between P100 amplitude and V1 structure (surface area and cortical thickness) in the total sample before removing outliers

We ran the same correlation analyses as described in 1.1. in the total sample prior to removing outliers (n=418).

1.3. Correlation between P100 amplitude and V1 structure (surface area and cortical thickness) in subgroups separated by diagnosis

We performed Pearson correlation analyses in patients with SCZ spectrum and BD separately and tested if the structure- function relationship was significantly different between the two diagnostic groups using the paired r test implemented in R. Prior to running the analyses, we controlled for the effect of age, sex, eTIV and Euler number on total V1 surface area, and for effects of age, sex and standard error for P100 amplitude on P100 amplitude. Further, we ran correlation test between the P100 amplitude and the V1 cortical thickness (corrected for effects of age, sex, eTIV, and Euler number) in SCZ spectrum and BD and compared results between the two diagnostic groups.

1.4. Spearman and Kendall correlation between P100 amplitude and V1 structure (surface area and cortical thickness) in healthy individuals

To ensure that the choice of correlation analyses did not influence results we additionally performed Kendall and Spearman correlation analyses between P100 amplitude and V1 structure (surface area and thickness) in healthy individuals (n=307) and ran the paired r test to assess whether results differed between the different correlation test applied.

1.5. Differences in mean total V1 surface area, P100 amplitude, V1 cortical thickness and eTIV between healthy individuals, SCZ spectrum and BD

We performed the Welch t- test to compare differences in mean total V1 surface area, mean P100 amplitude, mean V1 thickness and mean eTIV between healthy individuals (n=307) and patients (n=75) and between healthy individuals, SCZ spectrum (n=30) and BD (n=45).

2. Results from supplementary analyses

A p- value <0.002 was considered significant after correcting for multiple testing.

2.1. Correlation between P100 amplitude and V1 structure (surface area and cortical thickness) in the outlier pruned total sample

Pearson correlation analyses revealed a positive relationship between the P100 amplitude and the total V1 surface area (r=0.15, p=0.003), but not V1 cortical thickness (r=0.029, p=0.58) in the total sample after removing outliers (n=382). See supp Fig 1.

2.2. Correlation between P100 amplitude and V1 structure (surface area and cortical thickness) in the total sample before removing outliers

The correlation was significant between the P100 amplitude and the total V1 surface area (r=0.13, p=0.009), but not V1 cortical thickness (r=0.08, p=0.1) in the total sample prior to removing outliers (n=418). See supp Fig 2.

2.3. Correlation between P100 amplitude and V1 structure (surface area and cortical thickness) in subgroups separated by diagnosis

Our patients with SCZ spectrum disorder (n=30), showed no significant correlation between the P100 amplitude and the total V1 surface area (r=0.11, p=0.53) or V1cortical thickness (r=0.15, p=0.39). Similarly, patients with BD (n=45) showed no significant correlation between the P100 amplitude and the total V1 surface area (r=0.13, p=0.37) or V1 cortical thickness (r =0.28, p=0.045). Further, the paired r test revealed non- significant differences in the V1 structure- function relationship between SCZ spectrum and BD.

2.4. Spearman and Kendall correlation between P100 amplitude and V1 structure (surface area and thickness) in healthy individuals

The paired r test revealed no significant difference in the correlation between P100 amplitude and total V1 surface area in healthy individuals when using Spearman vs. Kendall (z=0.73, p=0.46), Kendall vs. Pearson (z=0.52, p=0.6) or Pearson vs. Spearman (z=0.21, p=0.83). Further, no significant difference in the correlation between P100 amplitude and V1 cortical thickness was observed when using Spearman vs. Kendall (z=0.05, p=0.96), Kendall vs. Pearson (z=0.4, p=0.66) or Pearson vs. Spearman (z=0.5, p=0.62) correlation tests.

2.5. Differences in mean total V1 surface area, P100 amplitude, V1 cortical thickness and eTIV between healthy individuals, SCZ spectrum and BD

Patients with BD exhibited significantly larger mean V1 cortical thickness compared to healthy individuals (p=7.9e-07) and compared to patients with SCZ spectrum (p=0.001) disorders. Further, when comparing patients (n=75) showed significantly larger V1 cortical thickness compared to healthy individuals (p=3.5- 05). See supp Fig 6 illustrating differences in means between diagnostic groups.

3. Figure tables

3.1. Supp Fig 1 a

Pearson correlation between P100 amplitude and total V1 surface area in the total sample after removing outliers (n=382). **b** Pearson correlation between P100 amplitude and V1 cortical thickness in the total sample after removing outliers.

3.2. Supp Fig 2 a

Pearson correlation between P100 amplitude and total V1 surface area in the total sample prior to removing outliers (n=418). **b** Pearson correlation between P100 amplitude and V1 cortical thickness in the total sample prior to removing outliers.

Supp Fig 3 a

Pearson correlation between P100 amplitude and total V1 surface area in patients with SCZ spectrum (n=30) and BD (n=45). **b** Pearson correlation between P100 amplitude and V1 cortical thickness in patients with SCZ spectrum and BD.

Supp Fig 4 a

Spearman correlation between P100 amplitude and total V1 surface area in healthy individuals (n=307). **b** Spearman correlation between P100 amplitude and V1 cortical thickness in healthy individuals.

Supp Fig 5 a

Kendall correlation between P100 amplitude and total V1 surface area in healthy individuals (n=307). **b** Kendall correlation between P100 amplitude and V1 thickness in healthy individuals.

Supp Fig 6 a

Differences in mean total V1 surface area between healthy individuals (n=307)), SCZ spectrum (n=30) and BD (n=45). **b** Differences in mean P100 amplitude between healthy individuals, SCZ spectrum and BD. **c** Differences in mean V1 thickness between healthy individuals, SCZ spectrum and BD. **d** Differences in mean estimated total intracranial volume (eTIV) between healthy individuals, SCZ spectrum and BD. P- values from the Welch t- test are shown between each group and indicate whether means are significantly different between groups ($p<0.002$ = significant).

Supp Fig 7 a

Differences in mean total V1 surface area between healthy individuals (n=307) and patients (n=75). **b** Differences in mean P100 amplitude between healthy individuals and patients. **c** Differences in mean V1 thickness between healthy individuals and patients. **d** Differences in mean estimated total intracranial volume (eTIV) between healthy individuals and patients. P- values from the Welch t- test are shown between each group and indicate whether means are significantly different between groups ($p<0.002$ = significant).