**Supplemental Materials**

**Methods**

Clustering methods belong to the category of *unsupervised* machine learning algorithms. It is difficult to quantify how well they perform in real-world problems where there is no ground truth. One approach to have confidence in clustering findings is experimenting with an independent clustering method and comparing the clustering results. Here, we used the standard k-means clustering (Table S1) to compare the groups determined by hierarchical clustering (Table 4). To ensure comparison is possible, we set the number of the k-means clusters to be five. Although not the same samples were assigned identically to clusters between the two methods (as expected), the general properties of each of the five clusters were similar. That is, summarizing each of the five clusters in terms of the five raw characteristics for both methods led to similar findings. This is solid evidence that the clustering results reported in this study are not only clinically interpretable, but are also a valid, robust representation of the studied cohort.

**Table S1. Symptom count scores according to hierarchical and k-means cluster analysis methods (median and interquartile range)**

| | Group 1 [a] (N = 46) | | Group 2 (N = 144) | | Group 3 (N = 276) | | Group 4 (N = 396) | | Group 5** (N = 541) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | M | IQR | M | IQR | M | IQR | M | IQR | M | IQR |
| **Hierarchical cluster analysis with ward linkage** | | | | | | | | | | |
| Hallucinations | 5 | 1-10 | 3 | 0-7 | 0 | 0-2 | 0 | 0-2 | 0 | 0-1 |
| Paranoia | 38 | 29-46 | 18 | 12-27 | 12 | 5-19 | 8 | 3-12 | 3 | 1-7 |
| Anxiety | 22 | 16-26 | 11 | 6-16 | 10 | 6-14 | 4 | 2-8 | 2 | 0-4 |
| Depression | 28 | 20-36 | 14 | 10-18 | 20 | 16-26 | 6 | 2-8 | 4 | 2-8 |
| (Hypo)mania | 10 | 8-12 | 9 | 8-10 | 3 | 2-5 | 6 | 5-8 | 1 | 0-2 |

| | Group 1 [a] (N = 147) | | Group 2 (N = 344) | | Group 3 (N = 196) | | Group 4 (N = 227) | | Group 5** (N = 489) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | M | IQR | M | IQR | M | IQR | M | IQR | M | IQR |
| **K-means cluster analysis** | | | | | | | | | | |
| Hallucinations | 3 | 1-7 | 0 | 0-2 | 0 | 0-2 | 0 | 0-3 | 0 | 0-0 |
| Paranoia | 27 | 19-37 | 7 | 2-12 | 11 | 5-18 | 10 | 5-16 | 3 | 1-7 |
| Anxiety | 16 | 12-22 | 4 | 2-8 | 10 | 6-14 | 4 | 2-8 | 2 | 0-4 |
| Depression | 22 | 16-28 | 6 | 2-10 | 22 | 18-26 | 8 | 4-12 | 4 | 2-8 |
| (Hypo)mania | 8 | 7-10 | 5 | 4-6 | 3 | 2-4 | 9 | 8-10 | 1 | 0-2 |

[a]High-risk group.

[b]Low-risk group.

Minimum scores for each scale were 0. Maximum scores for each scale: hallucinations = 45, paranoia = 75, anxiety = 42, depression = 42, and (hypo)mania = 13.

IQR = interquartile range; M = median.