

| model 1                                          | input data<br>TDA-groups | Values of c parameter |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           | 1         |           |
|--------------------------------------------------|--------------------------|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                                                  |                          | 0.01                  | 0.05      | 0.09      | 0.13      | 0.18      | 0.22      | 0.26      | 0.3       | 0.34      | 0.38      | 0.42      | 0.46      | 0.5       | 0.55      | 0.59      | 0.63      | 0.67      | 0.71      | 0.75      | 0.79      | 0.84      | 0.88      | 0.92      | 0.96      |           |           |
| Training cohort cohort 1<br>Test cohort cohort 2 | A                        | 0.0278639             | 0.1484754 | 0.2508666 | 0.3333441 | 0.4151197 | 0.4679193 | 0.512326  | 0.5501835 | 0.5828419 | 0.6113072 | 0.6363428 | 0.6585371 | 0.6783915 | 0.7003661 | 0.7160585 | 0.7303234 | 0.7433484 | 0.7552895 | 0.7662776 | 0.776423  | 0.7880615 | 0.7966341 | 0.8046233 | 0.8120872 | 0.8190761 |           |
|                                                  | B                        | -0.046841             | -0.15706  | -0.221928 | -0.268146 | -0.311312 | -0.338322 | -0.360682 | -0.379549 | -0.395711 | -0.409726 | -0.422008 | -0.432865 | -0.442601 | -0.453313 | -0.460951 | -0.467887 | -0.474215 | -0.480012 | -0.485343 | -0.490263 | -0.495904 | -0.500058 | -0.503927 | -0.507541 | -0.510925 |           |
|                                                  | C                        | -0.076306             | -0.250481 | -0.347462 | -0.413658 | -0.473347 | -0.509702 | -0.539252 | -0.563818 | -0.584606 | -0.602448 | -0.617946 | -0.631544 | -0.643552 | -0.65678  | -0.666158 | -0.674635 | -0.682337 | -0.689367 | -0.69581  | -0.701737 | -0.708512 | -0.713486 | -0.718109 | -0.722417 | -0.726442 |           |
| model 2                                          | k-mean clusters          | 0.01                  | 0.05      | 0.09      | 0.13      | 0.18      | 0.22      | 0.26      | 0.3       | 0.34      | 0.38      | 0.42      | 0.46      | 0.5       | 0.55      | 0.59      | 0.63      | 0.67      | 0.71      | 0.75      | 0.79      | 0.84      | 0.88      | 0.92      | 0.96      | 1         |           |
|                                                  |                          | 0_kmeans              | 0.0058776 | 0.0665176 | 0.1265354 | 0.1755895 | 0.2239837 | 0.2549125 | 0.2806899 | 0.3024773 | 0.3211096 | 0.3372399 | 0.3513326 | 0.3637497 | 0.3747732 | 0.3869269 | 0.3955602 | 0.4033743 | 0.4104809 | 0.4169719 | 0.4229241 | 0.4284022 | 0.4346653 | 0.4392638 | 0.4435382 | 0.4475217 | 0.4512429 |
|                                                  |                          | 1_kmeans              | -0.030257 | -0.105131 | -0.151265 | -0.184828 | -0.216649 | -0.236745 | -0.253491 | -0.267699 | -0.279951 | -0.290604 | -0.299971 | -0.308279 | -0.3157   | -0.323936 | -0.329823 | -0.335179 | -0.340074 | -0.344566 | -0.348703 | -0.352525 | -0.356915 | -0.360151 | -0.363168 | -0.36599  | -0.368633 |
| Training cohort cohort 1<br>Test cohort cohort 2 | 2_kmeans                 | 0.01                  | 0.05      | 0.09      | 0.13      | 0.18      | 0.22      | 0.26      | 0.3       | 0.34      | 0.38      | 0.42      | 0.46      | 0.5       | 0.55      | 0.59      | 0.63      | 0.67      | 0.71      | 0.75      | 0.79      | 0.84      | 0.88      | 0.92      | 0.96      | 1         |           |
|                                                  |                          | 2_kmeans              | -0.071983 | -0.233295 | -0.318986 | -0.374928 | -0.42334  | -0.451806 | -0.474346 | -0.492664 | -0.507823 | -0.520623 | -0.531565 | -0.541026 | -0.549289 | -0.558255 | -0.564534 | -0.570153 | -0.575212 | -0.579791 | -0.583953 | -0.587755 | -0.592067 | -0.595209 | -0.598112 | -0.600802 | -0.603302 |
|                                                  |                          | 0_PCA                 | -0.059111 | -0.190106 | -0.258786 | -0.303209 | -0.341292 | -0.363472 | -0.380886 | -0.39492  | -0.406475 | -0.416137 | -0.424334 | -0.431371 | -0.437476 | -0.44405  | -0.448622 | -0.452689 | -0.456329 | -0.459605 | -0.462569 | -0.46523  | -0.468263 | -0.470462 | -0.472484 | -0.47435  | -0.476076 |
| Training cohort cohort 1<br>Test cohort cohort 2 | 1_PCA                    | 0.0149078             | 0.1018023 | 0.1804946 | 0.2438578 | 0.3060933 | 0.3458571 | 0.3790154 | 0.4070666 | 0.4311602 | 0.4519997 | 0.4702315 | 0.4863177 | 0.5006175 | 0.5164061 | 0.5276368 | 0.5378138 | 0.5470796 | 0.5555518 | 0.5633287 | 0.5704823 | 0.5786807 | 0.5847062 | 0.5903115 | 0.5955394 | 0.6004269 |           |
|                                                  |                          | 2_PCA                 | -0.052548 | -0.186619 | -0.27016  | -0.330742 | -0.387792 | -0.423685 | -0.453513 | -0.47877  | -0.500536 | -0.519439 | -0.536057 | -0.550792 | -0.563956 | -0.57857  | -0.589022 | -0.598535 | -0.607234 | -0.61522  | -0.62258  | -0.629415 | -0.637237 | -0.643009 | -0.648395 | -0.653433 | -0.658157 |
|                                                  |                          | 0.01                  | 0.05      | 0.09      | 0.13      | 0.18      | 0.22      | 0.26      | 0.3       | 0.34      | 0.38      | 0.42      | 0.46      | 0.5       | 0.55      | 0.59      | 0.63      | 0.67      | 0.71      | 0.75      | 0.79      | 0.84      | 0.88      | 0.92      | 0.96      | 1         |           |
| Training cohort cohort 1<br>Test cohort cohort 2 | PANSS items              | P1                    | -0.019407 | -0.013298 | 0.010416  | 0.0361892 | 0.0683738 | 0.0935169 | 0.117986  | 0.1417609 | 0.1648557 | 0.187298  | 0.2090971 | 0.230324  | 0.250994  | 0.2760941 | 0.2956182 | 0.314676  | 0.3333276 | 0.3515337 | 0.3693417 | 0.3867709 | 0.4080512 | 0.4246905 | 0.441004  | 0.4570056 | 0.4727087 |
|                                                  |                          | P2                    | -0.02199  | -0.055431 | -0.076443 | -0.095209 | -0.117507 | -0.134856 | -0.151916 | -0.16874  | -0.185355 | -0.201776 | -0.218083 | -0.234168 | -0.250085 | -0.26975  | -0.285302 | -0.300697 | -0.315946 | -0.331038 | -0.345983 | -0.360784 | -0.379087 | -0.393574 | -0.407925 | -0.422145 | -0.436234 |
|                                                  |                          | P3                    | -0.022556 | -0.045208 | -0.05271  | -0.057635 | -0.062634 | -0.066253 | -0.069697 | -0.073033 | -0.076291 | -0.079487 | -0.082532 | -0.085582 | -0.088572 | -0.092227 | -0.095085 | -0.097883 | -0.100621 | -0.103299 | -0.105917 | -0.108476 | -0.11159  | -0.114015 | -0.116381 | -0.118689 | -0.120939 |
| Training cohort cohort 1<br>Test cohort cohort 2 | P4                       | -0.022487             | -0.054701 | -0.075076 | -0.094365 | -0.118761 | -0.138792 | -0.159297 | -0.180222 | -0.201508 | -0.223092 | -0.244981 | -0.267025 | -0.289222 | -0.317128 | -0.339539 | -0.361998 | -0.384491 | -0.406978 | -0.42945  | -0.451892 | -0.479881 | -0.502207 | -0.524465 | -0.546645 | -0.568742 |           |
|                                                  |                          | P5                    | -0.011775 | -0.007381 | 0.0074958 | 0.0231979 | 0.0422124 | 0.0566232 | 0.0702627 | 0.0831523 | 0.0953287 | 0.1068351 | 0.1175838 | 0.127826  | 0.1375106 | 0.148886  | 0.1574416 | 0.1655454 | 0.173259  | 0.1805496 | 0.1874662 | 0.1940303 | 0.2017701 | 0.2076121 | 0.2131614 | 0.2184339 | 0.223444  |
|                                                  |                          | P6                    | -0.023661 | -0.027609 | -0.011614 | 0.0074779 | 0.0323616 | 0.0523537 | 0.0721918 | 0.0917908 | 0.1111117 | 0.1301379 | 0.1488312 | 0.1672446 | 0.1853592 | 0.2075902 | 0.2250531 | 0.2422371 | 0.2591648 | 0.275817  | 0.2922123 | 0.3083575 | 0.3281974 | 0.3438039 | 0.3591812 | 0.3743353 | 0.389272  |
| Training cohort cohort 1<br>Test cohort cohort 2 | P7                       | -0.019979             | -0.04338  | -0.0547   | -0.064456 | -0.076363 | -0.08602  | -0.09586  | -0.105882 | -0.116066 | -0.126385 | -0.136744 | -0.147228 | -0.157768 | -0.170992 | -0.181589 | -0.192187 | -0.202773 | -0.213337 | -0.223869 | -0.234362 | -0.247414 | -0.257796 | -0.268122 | -0.278386 | -0.288586 |           |
|                                                  |                          | N1                    | -0.037294 | -0.084588 | -0.10685  | -0.123223 | -0.139748 | -0.150974 | -0.160945 | -0.169948 | -0.17818  | -0.185788 | -0.192913 | -0.199596 | -0.205927 | -0.213432 | -0.219167 | -0.224701 | -0.230052 | -0.235269 | -0.240363 | -0.245352 | -0.251464 | -0.256269 | -0.261011 | -0.265698 | -0.270337 |
|                                                  |                          | N2                    | -0.036802 | -0.085862 | -0.109996 | -0.127539 | -0.144451 | -0.155151 | -0.163882 | -0.170975 | -0.17667  | -0.181157 | -0.184483 | -0.186941 | -0.188565 | -0.189562 | -0.189625 | -0.189107 | -0.188059 | -0.186542 | -0.184596 | -0.182262 | -0.178849 | -0.175763 | -0.172389 | -0.168753 | -0.164877 |
| Training cohort cohort 1<br>Test cohort cohort 2 | N3                       | -0.026781             | -0.06186  | -0.079346 | -0.092721 | -0.106641 | -0.11631  | -0.12501  | -0.132922 | -0.140173 | -0.146859 | -0.153074 | -0.158846 | -0.164238 | -0.170507 | -0.175187 | -0.179603 | -0.183793 | -0.187756 | -0.191521 | -0.195107 | -0.199359 | -0.202593 | -0.205691 | -0.208663 | -0.211518 |           |
|                                                  |                          | N4                    | -0.042663 | -0.112681 | -0.157062 | -0.194541 | -0.235945 | -0.265901 | -0.293592 | -0.319347 | -0.343409 | -0.36597  | -0.387158 | -0.407152 | -0.426045 | -0.44826  | -0.465014 | -0.480941 | -0.496113 | -0.510577 | -0.524389 | -0.537594 | -0.553312 | -0.5653   | -0.576804 | -0.587855 | -0.59848  |
|                                                  |                          | N5                    | -0.030726 | -0.071037 | -0.0923   | -0.110021 | -0.130387 | -0.145974 | -0.161181 | -0.176114 | -0.19083  | -0.205358 | -0.219685 | -0.233875 | -0.247912 | -0.265247 | -0.278951 | -0.292509 | -0.305947 | -0.319226 | -0.332365 | -0.345364 | -0.361418 | -0.374108 | -0.386663 | -0.399083 | -0.411371 |
| Training cohort cohort 1<br>Test cohort cohort 2 | N6                       | -0.038108             | -0.104916 | -0.150172 | -0.189855 | -0.235208 | -0.269064 | -0.301205 | -0.331883 | -0.361279 | -0.389536 | -0.416751 | -0.443041 | -0.468473 | -0.499161 | -0.522899 | -0.545969 | -0.568444 | -0.590314 | -0.611635 | -0.63244  | -0.657761 | -0.677502 | -0.696809 | -0.715704 | -0.734206 |           |
|                                                  |                          | N7                    | -0.024478 | -0.06584  | -0.09362  | -0.118337 | -0.147114 | -0.16898  | -0.190017 | -0.210333 | -0.23     | -0.249069 | -0.267466 | -0.285413 | -0.302858 | -0.323998 | -0.340046 | -0.356388 | -0.37197  | -0.387158 | -0.401973 | -0.416431 | -0.434021 | -0.447726 | -0.461115 | -0.474203 | -0.486999 |
|                                                  |                          | G1                    | -0.014787 | -0.01397  | -0.001115 | 0.0126088 | 0.0290252 | 0.0412462 | 0.0526274 | 0.0632117 | 0.0730569 | 0.0822237 | 0.0907143 | 0.0986705 | 0.1061024 | 0.1144726 | 0.1217189 | 0.1327768 | 0.1380754 | 0.1430585 | 0.1477488 | 0.1532307 | 0.1573341 | 0.1612048 | 0.1648579 | 0.1683076 |           |
| Training cohort cohort 1<br>Test cohort cohort 2 | G2                       | -0.029653             | -0.043071 | -0.033562 | -0.020697 | -0.003677 | 0.0099054 | 0.0232433 | 0.0362729 | 0.0489786 | 0.0613647 | 0.0734755 | 0.0852775 | 0.0968086 | 0.1108662 | 0.121846  | 0.132604  | 0.1431661 | 0.1535214 | 0.1636904 | 0.1736826 | 0.1859375 | 0.1955628 | 0.2050369 | 0.2143664 | 0.2235572 |           |
|                                                  |                          | G3                    | -0.027031 | -0.052506 | -0.059269 | -0.06271  | -0.065429 | -0.06703  | -0.068352 | -0.06949  | -0.070496 | -0.0714   | -0.072203 | -0.072949 | -0.073634 | -0.074414 | -0.074985 | -0.075512 | -0.076008 | -0.076463 | -0.076885 | -0.077277 | -0.07773  | -0.078064 | -0.078376 | -0.078667 | -0.07894  |
|                                                  |                          | G4                    | -0.026238 | -0.045885 | -0.047434 | -0.046721 | -0.045547 | -0.044932 | -0.044709 | -0.044881 | -0.045421 | -0.046291 | -0.047397 | -0.048793 | -0.05041  | -0.052696 | -0.054706 | -0.056854 | -0.059116 | -0.061484 | -0.063941 | -0.066473 | -0.069727 | -0.072391 | -0.0751   | -0.077846 | -0.080623 |
| Training cohort cohort 1<br>Test cohort cohort 2 | G5                       | -0.027674             | -0.073608 | -0.103738 | -0.130107 | -0.160344 | -0.183009 | -0.204579 | -0.225201 | -0.244976 | -0.263982 | -0.282168 | -0.299768 | -0.316749 | -0.337166 | -0.352894 | -0.368116 | -0.382874 | -0.397171 | -0.41104  | -0.424502 | -0.440789 | -0.453407 | -0.465678 | -0.477617 | -0.489239 |           |
|                                                  |                          | G6                    | -0.038529 | -0.093592 | -0.124684 | -0.150223 | -0.178299 | -0.198701 | -0.217695 | -0.235512 | -0.252312 | -0.268215 | -0.283265 | -0.297624 | -0.311324 | -0.327605 | -0.340013 | -0.35192  | -0.363375 | -0.374388 | -0.385    | -0.395237 | -0.407543 | -0.417021 | -0.426194 | -0.435082 | -0.4437   |
|                                                  |                          | G7                    | -0.029759 | -0.058656 | -0.066524 | -0.070287 | -0.072829 | -0.074    | -0.074742 | -0.075212 | -0.075507 | -0.07569  | -0.0758   |           |           |           |           |           |           |           |           |           |           |           |           |           |           |