**Supplementary Table 1** Results of group-based trajectory modelling

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Number of  groups | Trajectory  shapes | Log-likelihood | Bayesian  Information  Criterion | Participants per group (%) | Mean posterior probabilities |
| 2 | Linear | -845.84 | -862.87 | 52.1/47.9 | 0.967/0.943 |
|  | Quadratic | -844.57 | -867.27 | 52.1/47.9 | 0.969/0.940 |
|  | Cubic | -844.54 | -872.93 | 52.0/48.0 | 0.969/0.941 |
| 3 | Linear | -761.65 | -787.19 | 40.4/43.6/16.1 | 0.950/0.893/0.938 |
|  | Quadratic | -760.26 | -794.32 | 40.6/43.6/15.8 | 0.953/0.893/0.945 |
|  | Cubic | -759.95 | -802.52 | 40.6/43.7/15.7 | 0.954/0.893/0.942 |
| 4 | Linear | -721.24 | -755.30 | 40.3/42.3/4.9/12.6 | 0.952/0.896/0.945/0.892 |
|  | Quadratic | -717.10 | -762.52 | 40.5/42.4/4.5/12.6 | 0.956/0.899/0.931/0.894 |
|  | Cubic | -716.06 | -772.83 | 40.5/42.6/4.3/12.6 | 0.957/0.899/0.944/0.894 |
| 5 | Linear | -701.27 | -743.85 | 30.7/39.0/13.4/13.8/3.2 | 0.823/0.945/0.890/0.759/0.929 |
|  | Quadratic | -688.11 | -744.88 | 39.9/10.5/32.4/3.9/13.3 | 0.946/0.829/0.858/0.918/0.846 |
|  | Cubic | -684.16 | -755.12 | 40.0/34.5/13.3/8.6/3.7 | 0.953/0.870/0.840/0.817/0.924 |

**Supplementary Table 2**: The analysis of optimal trend for three trajectories

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Trends of each  Trajectories# | | Group | Parameter | Estimate | Standard Error | T for H0\* | Prob > |T| |
| 2 2 2 | 1 | | Intercept | 0.64488 | 0.04976 | 12.960 | 0.0000 |
|  |  | | Linear | -0.00157 | 0.02826 | -0.056 | 0.9556 |
|  |  | | Quadratic | 0.00133 | 0.00346 | 0.384 | 0.7013 |
|  | 2 | | Intercept | 0.94409 | 0.05027 | 18.779 | 0.0000 |
|  |  | | Linear | 0.06487 | 0.02974 | 2.182 | 0.0293 |
|  |  | | Quadratic | -0.00546 | 0.00370 | -1.477 | 0.1397 |
|  | 3 | | Intercept | 1.35052 | 0.09065 | 14.898 | 0.0000 |
|  |  | | Linear | 0.05680 | 0.05168 | 1.099 | 0.2719 |
|  |  | | Quadratic | -0.00238 | 0.00667 | -0.356 | 0.7216 |
|  |  | |  |  |  |  |  |
| 1 1 1 | 1 | | Intercept | 0.62692 | 0.02697 | 23.242 | 0.0000 |
|  |  | | Linear | 0.00924 | 0.00598 | 1.546 | 0.1223 |
|  | 2 | | Intercept | 1.00648 | 0.03114 | 32.320 | 0.0000 |
|  |  | | Linear | 0.02152 | 0.00624 | 3.441 | 0.0006 |
|  | 3 | | Intercept | 1.37628 | 0.05001 | 27.522 | 0.0000 |
|  |  | | Linear | 0.03788 | 0.01142 | 3.318 | 0.0000 |

#: The number represents the trend of each trajectories. For example, if the trend of one model is “1 2 3”,"1" means that the trend of the first trajectories is linear, “2”indicates the second trajectory should be modelled on a quadratic trend whereas “3” indicates a cubic trend for the last trajectory.

\*: H0 : parameter = 0

In Table 2, BIC decreases with the increase of the number of trajectories. The four-group trajectory model with linear shapes and the five-group trajectory model with linear shapes had higher Bayesian information criterion values than the other models, but in some groups, the percentage is less than 5%. The average posterior probability of group membership was over 0.85 for all groups, suggesting the selected model can accurately categorize individuals with similar patterns of change. So, we decided to find the best model when the number of trajectories was three.

As a general rule, the quadratic model for three trajectories is tested first. If the quadratic component of this model is not significant, the model for one linear trajectory is run to determine the BIC value for this model. In supplementary table 1, the analysis of optimal trend shows that the quadratic terms of trajectory 1, trajectory 2 and trajectory3 are not significant. Given this, we tested a model with three linear trajectories. The model with three quadratic trajectories (BIC=-794.32) is compared to the model with three linear trajectories (BIC=-787.19) using the estimate of the log Bayes factor. The estimate of the log Bayes factor is calculated as follows:

2\*[(-787.19)-(-794.32)]=14.26 >10

It’s reveals an increase in fit for the model with three linear trajectories. As a result, the three linear trajectory model is retained as the final and most parsimonious model.