**Supplement Table 1. LDA topic model for extracting text topics**

|  |  |  |
| --- | --- | --- |
| **Topic** | **Topic words** | **Summarizing topics** |
| Topic1 | Disappointment, examination, physical test, exam results, failing grades, fall behind, inferiority complex, everyone, neglect, impatience, make friends, reaction, helplessness, denigration, face, obvious, indifference | Being ostracized or left out by classmates |
| Topic2 | Grandmother, father, cough, bad news, answering the phone, lorry, joining the police academy, mother, illness, crying, life, accident, lost, year round, mind, memories, paralysis | Serious illness or unexpected death of a family member |
| Topic3 | Monitor, evaluation award, unfair, anger, angry, news, physical performance, classmates, feel, class, belong to, deserve, relationship, dissatisfaction, intolerable, complaint | Suffering from injustice |

**Supplement Table 2. 17 Ruminative scenario topics**

|  |  |
| --- | --- |
| **Topic** | **Scenario topics** |
| Topic1 | Being ostracized or left out by classmates |
| Topic2 | Serious illness or unexpected death of a family member |
| Topic3 | Suffering from injustice |
| Topic4 | Public humiliation brings embarrassment |
| Topic5 | Failed and devastated romance |
| Topic6 | Insulted and verbally abused in public |
| Topic7 | Conflict or clash with superiors |
| Topic8 | Experiencing domestic violence |
| Topic9 | Accidental personal injury |
| Topic10 | Self-abuse or self-harm |
| Topic11 | Bullying at school |
| Topic12 | Experiencing the suicide of a friend or family member |
| Topic13 | Lack of close friends leads to inner loneliness |
| Topic14 | Excessive guilt or a heavy heart burden |
| Topic15 | Low self-esteem or lack of confidence |
| Topic16 | Inability to adapt to the current environment |
| Topic17 | Interpersonal difficulties |

**Supplement Table 3. Average number of time point of each item across subjects in ruminators.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item No.** | **MeanSD** | **Item No.** | **MeanSD** | **Item No.** | **MeanSD** |
| 1 | 89684104 | 21 | 113315178 | 41 | 60595290 |
| 2 | 65863114 | 22 | 94035037 | 42 | 86754094 |
| 3 | 92274496 | 23 | 73452020 | 43 | 60184274 |
| 4 | 70523283 | 24 | 65134404 | 44 | 68793542 |
| 5 | 53683428 | 25 | 55943415 | 45 | 67083325 |
| 6 | 75603717 | 26 | 76863406 | 46 | 58063693 |
| 7 | 57783069 | 27 | 67914236 | 47 | 67713331 |
| 8 | 53333159 | 28 | 56753421 | 48 | 60583835 |
| 9 | 59483944 | 29 | 66193680 | 49 | 67213627 |
| 10 | 77293847 | 30 | 57402658 | 50 | 62894103 |
| 11 | 103024687 | 31 | 63353517 | 51 | 63243675 |
| 12 | 61033076 | 32 | 63883099 | 52 | 62303971 |
| 13 | 67203477 | 33 | 56293199 | 53 | 62223866 |
| 14 | 95094435 | 34 | 69123628 |  |  |
| 15 | 60953647 | 35 | 60433016 |  |  |
| 16 | 72593530 | 36 | 60713082 |  |  |
| 17 | 80514484 | 37 | 55562796 |  |  |
| 18 | 62243962 | 38 | 66694116 |  |  |
| 19 | 74383506 | 39 | 58503744 |  |  |
| 20 | 75674119 | 40 | 60593549 |  |  |

**Supplement Table 4. Average number of time point of each item across subjects in healthy controls.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item No. | MeanSD | Item No. | MeanSD | Item No. | MeanSD |
| 1 | 83224052 | 21 | 9899 | 41 | 87925139 |
| 2 | 62232287 | 22 | 84093792 | 42 | 58213387 |
| 3 | 83993864 | 23 | 67953135 | 43 | 76194377 |
| 4 | 68093045 | 24 | 67342931 | 44 | 68973078 |
| 5 | 55052456 | 25 | 60645226 | 45 | 56393861 |
| 6 | 77563160 | 26 | 64593287 | 46 | 64162967 |
| 7 | 58993726 | 27 | 65733652 | 47 | 56152551 |
| 8 | 47062534 | 28 | 65053212 | 48 | 66262080 |
| 9 | 55543486 | 29 | 49443126 | 49 | 64552925 |
| 10 | 77562887 | 30 | 57803425 | 50 | 59063306 |
| 11 | 94804266 | 31 | 65232806 | 51 | 63353567 |
| 12 | 54342154 | 32 | 59642776 | 52 | 55043024 |
| 13 | 63363439 | 33 | 72015534 | 53 | 70934088 |
| 14 | 94724141 | 34 | 80368134 |  |  |
| 15 | 59883400 | 35 | 63133891 |  |  |
| 16 | 66943753 | 36 | 57953341 |  |  |
| 17 | 78173887 | 37 | 50533102 |  |  |
| 18 | 60983485 | 38 | 65023356 |  |  |
| 19 | 74763901 | 39 | 57574389 |  |  |
| 20 | 7934 | 40 | 53783513 |  |  |