**Supplementary Table 1 Fear of Recurrence Scale.**

|  |  |
| --- | --- |
| Item | Concern |
| Fear 1 | Concerns about disease progression |
| Fear 2 | Feeling anxious before doctor's examinations or routine check-ups |
| Fear 3 | Fear of pain caused by the illness |
| Fear 4 | Worries about the impact on future work |
| Fear 5 | Experiencing physical discomfort such as accelerated heartbeat, stomach pain, tension, etc., when anxious |
| Fear 6 | Worry that my illness may be transmitted to my children |
| Fear 7 | Concerns about relying on strangers for future activities and daily life |
| Fear 8 | Worries that I may not be able to continue my hobbies due to the illness |
| Fear 9 | Concerns about undergoing major treatments during the course of the illness |
| Fear 10 | Worries that treatment and medication may harm my body |
| Fear 11 | Concerns about the impact on my family if something happens to me |
| Fear 12 | Worries about not being able to continue working in the future |

**Supplementary Table 2 Herth Hope Scale.**

|  |  |
| --- | --- |
| Item | Statement |
| Hope 1 | I adopt a positive attitude towards life |
| Hope 2 | I have short-term, medium-term, or long-term goals in life |
| Hope 3 | I feel very lonely |
| Hope 4 | Even if the current situation is difficult, I can still see the light |
| Hope 5 | I am full of confidence in the treatment |
| Hope 6 | I feel fearful of the future |
| Hope 7 | I often reminisce about the happy times in the past |
| Hope 8 | I feel that I have the strength to overcome difficulties |
| Hope 9 | I am able to give and receive love and care, and I am also willing to accept the care and love from others |
| Hope 10 | I think I should take a positive attitude and actions to make things better |
| Hope 11 | I believe that as long as I make an effort, I can fulfill my role every day |
| Hope 12 | I feel that life is valuable and meaningful |

**Supplementary Table 3 Weights matrix for fear network.**

|  |
| --- |
| **Weights matrix** |
|  | **Network** |
| **Variable** | **fear1** | **fear2** | **fear3** | **fear4** | **fear5** | **fear6** | **fear7** | **fear8** | **fear9** | **fear10** | **fear11** | **fear12** |
| fear1 | 0 | 0.278 | 0.054 | 0.116 | 0.04 | 7.190×10-4 | 0 | 0 | 0.151 | 0.108 | 0.129 | 0 |
| fear2 | 0.278 | 0 | 0.193 | 0.108 | 0.092 | 0.02 | 6.629×10-4 | 0.018 | 0.026 | 0.071 | 0.05 | 0.068 |
| fear3 | 0.054 | 0.193 | 0 | 0.206 | 0.134 | 0 | 0 | 0 | 0.115 | 0.056 | 0.062 | 0 |
| fear4 | 0.116 | 0.108 | 0.206 | 0 | 0.168 | 0 | 0 | 0.039 | 0.161 | -0.029 | 0.027 | 0.186 |
| fear5 | 0.04 | 0.092 | 0.134 | 0.168 | 0 | 0.164 | 0.076 | 0.053 | 0.066 | 0.006 | 0.029 | -0.034 |
| fear6 | 7.190×10-4 | 0.02 | 0 | 0 | 0.164 | 0 | 0.219 | 0.028 | 0.043 | 0.054 | 0.12 | 0.091 |
| fear7 | 0 | 6.629×10-4 | 0 | 0 | 0.076 | 0.219 | 0 | 0.278 | 0 | 0.048 | 0.004 | 0.132 |
| fear8 | 0 | 0.018 | 0 | 0.039 | 0.053 | 0.028 | 0.278 | 0 | 0.132 | 0.128 | 0.044 | 0.184 |
| fear9 | 0.151 | 0.026 | 0.115 | 0.161 | 0.066 | 0.043 | 0 | 0.132 | 0 | 0.223 | 0.076 | 0 |
| fear10 | 0.108 | 0.071 | 0.056 | -0.029 | 0.006 | 0.054 | 0.048 | 0.128 | 0.223 | 0 | 0.276 | 0.061 |
| fear11 | 0.129 | 0.05 | 0.062 | 0.027 | 0.029 | 0.12 | 0.004 | 0.044 | 0.076 | 0.276 | 0 | 0.233 |
| fear12 | 0 | 0.068 | 0 | 0.186 | -0.034 | 0.091 | 0.132 | 0.184 | 0 | 0.061 | 0.233 | 0 |

**Supplementary Table 4 Weights matrix for fear network grouped by gender.**

|  |
| --- |
| **Weights matrix** |
|  | **Male** | **Female** |
| **Variable** | **fear1** | **fear2** | **fear3** | **fear4** | **fear5** | **fear6** | **fear7** | **fear8** | **fear9** | **fear10** | **fear11** | **fear12** | **fear1** | **fear2** | **fear3** | **fear4** | **fear5** | **fear6** | **fear7** | **fear8** | **fear9** | **fear10** | **fear11** | **fear12** |
| fear1 | 0 | 0.207 | 0 | 0.142 | 0.007 | 0 | 0.04 | 0 | 0.097 | 0.214 | 0.153 | 0 | 0 | 0.315 | 0.118 | 0.087 | 0.065 | 0 | -0.022 | 0.016 | 0.185 | 0.019 | 0.108 | 0 |
| fear2 | 0.207 | 0 | 0.161 | 0.097 | 0.112 | 0 | 0.022 | 0.063 | 0.12 | 0 | 0.043 | 0.135 | 0.315 | 0 | 0.162 | 0.12 | 0.052 | 0.033 | 0 | 0.002 | 0 | 0.109 | 0.042 | 0.038 |
| fear3 | 0 | 0.161 | 0 | 0.231 | 0.126 | 0 | 0 | 0.052 | 0.177 | 0 | 0 | 0.076 | 0.118 | 0.162 | 0 | 0.181 | 0.12 | 0.009 | 0 | 0 | 0.053 | 0.067 | 0.127 | -0.049 |
| fear4 | 0.142 | 0.097 | 0.231 | 0 | 0.099 | 0.072 | 0 | 0 | 0.171 | 0 | 0.035 | 0.146 | 0.087 | 0.12 | 0.181 | 0 | 0.195 | 0 | 0 | 0.092 | 0.131 | 0 | 0 | 0.177 |
| fear5 | 0.007 | 0.112 | 0.126 | 0.099 | 0 | 0.163 | 0.109 | 0.056 | 0.061 | 0.032 | 0 | 0 | 0.065 | 0.052 | 0.12 | 0.195 | 0 | 0.136 | 0.027 | 0.057 | 0.072 | 0 | 0.061 | -0.031 |
| fear6 | 0 | 0 | 0 | 0.072 | 0.163 | 0 | 0.294 | 0.025 | 0 | 0.057 | 0.098 | 0.09 | 0 | 0.033 | 0.009 | 0 | 0.136 | 0 | 0.147 | 0.05 | 0.068 | 0.043 | 0.118 | 0.082 |
| fear7 | 0.04 | 0.022 | 0 | 0 | 0.109 | 0.294 | 0 | 0.078 | 0 | 0.012 | 0 | 0.163 | -0.022 | 0 | 0 | 0 | 0.027 | 0.147 | 0 | 0.409 | 0 | 0.055 | 0.018 | 0.093 |
| fear8 | 0 | 0.063 | 0.052 | 0 | 0.056 | 0.025 | 0.078 | 0 | 0.098 | 0.168 | 0.022 | 0.185 | 0.016 | 0.002 | 0 | 0.092 | 0.057 | 0.05 | 0.409 | 0 | 0.128 | 0.098 | 0.056 | 0.169 |
| fear9 | 0.097 | 0.12 | 0.177 | 0.171 | 0.061 | 0 | 0 | 0.098 | 0 | 0.21 | 0.114 | 0 | 0.185 | 0 | 0.053 | 0.131 | 0.072 | 0.068 | 0 | 0.128 | 0 | 0.227 | 0.056 | 0 |
| fear10 | 0.214 | 0 | 0 | 0 | 0.032 | 0.057 | 0.012 | 0.168 | 0.21 | 0 | 0.213 | 0.103 | 0.019 | 0.109 | 0.067 | 0 | 0 | 0.043 | 0.055 | 0.098 | 0.227 | 0 | 0.297 | 0.037 |
| fear11 | 0.153 | 0.043 | 0 | 0.035 | 0 | 0.098 | 0 | 0.022 | 0.114 | 0.213 | 0 | 0.236 | 0.108 | 0.042 | 0.127 | 0 | 0.061 | 0.118 | 0.018 | 0.056 | 0.056 | 0.297 | 0 | 0.237 |
| fear12 | 0 | 0.135 | 0.076 | 0.146 | 0 | 0.09 | 0.163 | 0.185 | 0 | 0.103 | 0.236 | 0 | 0 | 0.038 | -0.049 | 0.177 | -0.031 | 0.082 | 0.093 | 0.169 | 0 | 0.037 | 0.237 | 0 |

**Supplementary Table 5 Weights matrix for fear network grouped by age.**

|  |
| --- |
| **Weights matrix** |
|  | **≤44** | **＞44** |
| **Variable** | **fear1** | **fear2** | **fear3** | **fear4** | **fear5** | **fear6** | **fear7** | **fear8** | **fear9** | **fear10** | **fear11** | **fear12** | **fear1** | **fear2** | **fear3** | **fear4** | **fear5** | **fear6** | **fear7** | **fear8** | **fear9** | **fear10** | **fear11** | **fear12** |
| fear1 | 0 | 0 | 0.015 | 0.101 | 0 | 0 | -0.001 | 0 | 0.189 | 0.275 | 0.158 | 0.022 | 0 | 0.335 | 0.06 | 0.124 | 0.032 | 0.036 | 0 | 0 | 0.136 | 0.052 | 0.123 | 0 |
| fear2 | 0 | 0 | 0.065 | 0.201 | 0.03 | 0.039 | 0 | 0 | 0.195 | 0.039 | 0.131 | 0.13 | 0.335 | 0 | 0.208 | 0.083 | 0.089 | 0 | 0.02 | 0.058 | 0 | 0.081 | 0.038 | 0.023 |
| fear3 | 0.015 | 0.065 | 0 | 0.313 | 0 | 0.07 | 0 | 0 | 0.058 | 0 | 0.13 | 0 | 0.06 | 0.208 | 0 | 0.167 | 0.168 | 0 | 0 | 0 | 0.119 | 0.079 | 0.035 | 0 |
| fear4 | 0.101 | 0.201 | 0.313 | 0 | 0.179 | 0 | 0 | 0 | 0.122 | 0 | 0.072 | 0 | 0.124 | 0.083 | 0.167 | 0 | 0.151 | 0 | 0 | 0.048 | 0.149 | 0 | 0 | 0.233 |
| fear5 | 0 | 0.03 | 0 | 0.179 | 0 | 0.186 | 0.057 | 0 | 0 | 0.09 | 0 | 0 | 0.032 | 0.089 | 0.168 | 0.151 | 0 | 0.135 | 0.072 | 0.038 | 0.101 | 0 | 0.03 | 0 |
| fear6 | 0 | 0.039 | 0.07 | 0 | 0.186 | 0 | 0.129 | 0 | 0 | 0.085 | 0.099 | 0.069 | 0.036 | 0 | 0 | 0 | 0.135 | 0 | 0.236 | 0.049 | 0.048 | 0.037 | 0.114 | 0.082 |
| fear7 | -0.001 | 0 | 0 | 0 | 0.057 | 0.129 | 0 | 0.407 | 0 | 0.068 | 0 | 0.209 | 0 | 0.02 | 0 | 0 | 0.072 | 0.236 | 0 | 0.228 | 0 | 0.043 | 0.009 | 0.107 |
| fear8 | 0 | 0 | 0 | 0 | 0 | 0 | 0.407 | 0 | 0 | 0.138 | 0.073 | 0.112 | 0 | 0.058 | 0 | 0.048 | 0.038 | 0.049 | 0.228 | 0 | 0.176 | 0.101 | 0.032 | 0.195 |
| fear9 | 0.189 | 0.195 | 0.058 | 0.122 | 0 | 0 | 0 | 0 | 0 | 0.072 | 0 | 0.165 | 0.136 | 0 | 0.119 | 0.149 | 0.101 | 0.048 | 0 | 0.176 | 0 | 0.234 | 0.112 | -0.031 |
| fear10 | 0.275 | 0.039 | 0 | 0 | 0.09 | 0.085 | 0.068 | 0.138 | 0.072 | 0 | 0.2 | 0 | 0.052 | 0.081 | 0.079 | 0 | 0 | 0.037 | 0.043 | 0.101 | 0.234 | 0 | 0.28 | 0.078 |
| fear11 | 0.158 | 0.131 | 0.13 | 0.072 | 0 | 0.099 | 0 | 0.073 | 0 | 0.2 | 0 | 0.157 | 0.123 | 0.038 | 0.035 | 0 | 0.03 | 0.114 | 0.009 | 0.032 | 0.112 | 0.28 | 0 | 0.247 |
| fear12 | 0.022 | 0.13 | 0 | 0 | 0 | 0.069 | 0.209 | 0.112 | 0.165 | 0 | 0.157 | 0 | 0 | 0.023 | 0 | 0.233 | 0 | 0.082 | 0.107 | 0.195 | -0.031 | 0.078 | 0.247 | 0 |

**Supplementary Table 6** **Weights matrix for fear and hope co-network.**

|  |
| --- |
| **Weights matrix** |
|  | **Network** |
| **Variable** | **fear1** | **fear2** | **fear3** | **fear4** | **fear5** | **fear6** | **fear7** | **fear8** | **fear9** | **fear10** | **fear11** | **fear12** | **hope1** | **hope2** | **hope3** | **hope4** | **hope5** | **hope6** | **hope7** | **hope8** | **hope9** | **hope10** | **hope11** | **hope12** |
| fear1 | 0 | 0.265 | 0.056 | 0.112 | 0.04 | 0.002 | 0 | 0 | 0.149 | 0.107 | 0.125 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.027 | 0 | 0 | 0 | -0.007 |
| fear2 | 0.265 | 0 | 0.187 | 0.103 | 0.082 | 0.018 | 0 | 0.019 | 0.029 | 0.068 | 0.042 | 0.065 | 0 | 0 | 0 | 0 | 0 | 0.079 | 0 | 0 | 0 | 0 | 0 | 0 |
| fear3 | 0.056 | 0.187 | 0 | 0.2 | 0.131 | 0 | 0 | 0.005 | 0.115 | 0.054 | 0.064 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.04 | 0 | 0 | 0 | 0 | 0 |
| fear4 | 0.112 | 0.103 | 0.2 | 0 | 0.157 | 0 | 0 | 0.038 | 0.152 | 0 | 0.021 | 0.174 | 0 | 0 | 0 | 0 | 0 | 0.023 | 0 | 0 | 0 | 0 | 0 | 0 |
| fear5 | 0.04 | 0.082 | 0.131 | 0.157 | 0 | 0.157 | 0.058 | 0.05 | 0.066 | 0.003 | 0.018 | 0 | 0 | 0 | 0 | 0.003 | 0 | 0.043 | 0 | 0 | 0 | 0 | 0 | -0.006 |
| fear6 | 0.002 | 0.018 | 0 | 0 | 0.157 | 0 | 0.209 | 0.031 | 0.044 | 0.055 | 0.116 | 0.087 | 0 | 0 | 0 | 0 | 0 | 0 | 0.009 | 0 | 0 | 0 | 0 | 0 |
| fear7 | 0 | 0 | 0 | 0 | 0.058 | 0.209 | 0 | 0.267 | 0 | 0.044 | 0 | 0.122 | 0 | 0 | 0.054 | 0 | 0.012 | 0.082 | 0 | 0 | 0 | 0 | 0 | 0 |
| fear8 | 0 | 0.019 | 0.005 | 0.038 | 0.05 | 0.031 | 0.267 | 0 | 0.131 | 0.122 | 0.047 | 0.18 | 0 | 0 | 0 | 0 | 0.006 | 0 | 0.072 | 0 | 0 | 6.589×10-4 | 0 | 0 |
| fear9 | 0.149 | 0.029 | 0.115 | 0.152 | 0.066 | 0.044 | 0 | 0.131 | 0 | 0.213 | 0.078 | 0 | 0 | 0 | 0 | 0 | 0 | 0.009 | 0 | 0 | 0 | 0 | 0 | 0 |
| fear10 | 0.107 | 0.068 | 0.054 | 0 | 0.003 | 0.055 | 0.044 | 0.122 | 0.213 | 0 | 0.264 | 0.061 | 0 | 0 | 0 | 0 | 0 | 0 | 0.047 | 0 | 0 | 0 | 0 | 0 |
| fear11 | 0.125 | 0.042 | 0.064 | 0.021 | 0.018 | 0.116 | 0 | 0.047 | 0.078 | 0.264 | 0 | 0.225 | 0 | 0 | 0 | 0 | 0 | 0.089 | 0 | 0 | 0 | 0.006 | 0 | 0 |
| fear12 | 0 | 0.065 | 0 | 0.174 | 0 | 0.087 | 0.122 | 0.18 | 0 | 0.061 | 0.225 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| hope1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.244 | -0.095 | 0.101 | 0.183 | -0.009 | 0.076 | 0 | 0.06 | 0.055 | 0.023 | 0.08 |
| hope2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.244 | 0 | -0.017 | 0.175 | 0.061 | 0 | 0.07 | 0.117 | 0.052 | 0.015 | 0 | 0.03 |
| hope3 | 0 | 0 | 0 | 0 | 0 | 0 | 0.054 | 0 | 0 | 0 | 0 | 0 | -0.095 | -0.017 | 0 | -0.042 | -0.019 | 0.36 | 0 | -0.03 | -0.01 | 0 | -0.014 | -0.027 |
| hope4 | 0 | 0 | 0 | 0 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.101 | 0.175 | -0.042 | 0 | 0.239 | -0.017 | 0.05 | 0.059 | 0.087 | 0.045 | 0.048 | 0.02 |
| hope5 | 0 | 0 | 0 | 0 | 0 | 0 | 0.012 | 0.006 | 0 | 0 | 0 | 0 | 0.183 | 0.061 | -0.019 | 0.239 | 0 | -0.042 | 0.043 | 0.241 | 0.013 | 0.097 | 0.072 | 0.071 |
| hope6 | 0 | 0.079 | 0 | 0.023 | 0.043 | 0 | 0.082 | 0 | 0.009 | 0 | 0.089 | 0 | -0.009 | 0 | 0.36 | -0.017 | -0.042 | 0 | 0.037 | -0.064 | -0.008 | 0 | -0.062 | -0.018 |
| hope7 | 0 | 0 | -0.04 | 0 | 0 | 0.009 | 0 | 0.072 | 0 | 0.047 | 0 | 0 | 0.076 | 0.07 | 0 | 0.05 | 0.043 | 0.037 | 0 | 0.049 | 0 | 0.005 | 0.028 | 0.002 |
| hope8 | -0.027 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.117 | -0.03 | 0.059 | 0.241 | -0.064 | 0.049 | 0 | 0.209 | 0.086 | 0.116 | 0.074 |
| hope9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.06 | 0.052 | -0.01 | 0.087 | 0.013 | -0.008 | 0 | 0.209 | 0 | 0.253 | 0.14 | 0.086 |
| hope10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.589×10-4 | 0 | 0 | 0.006 | 0 | 0.055 | 0.015 | 0 | 0.045 | 0.097 | 0 | 0.005 | 0.086 | 0.253 | 0 | 0.284 | 0.266 |
| hope11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.023 | 0 | -0.014 | 0.048 | 0.072 | -0.062 | 0.028 | 0.116 | 0.14 | 0.284 | 0 | 0.353 |
| hope12 | -0.007 | 0 | 0 | 0 | -0.006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.08 | 0.03 | -0.027 | 0.02 | 0.071 | -0.018 | 0.002 | 0.074 | 0.086 | 0.266 | 0.353 | 0 |