Supplementary materials

Supplement Table 1. Associations between FA of cingulum bundle and DERS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 　 |  dorsal cingulum (L) |  dorsal cingulum (R) |  PHP cingulum (L) | PHP cingulum (R) |
| 　 | *r* | *P* | *r* | *P* | *r* | *P* | *r* | *P* |
| DERS total scores | -0.263 | 0.003 | -0.182 | 0.04 | -0.037 | 0.683 | -0.113 | 0.205 |
| Goals | -0.199 | 0.025 | -0.14 | 0.116 | -0.056 | 0.528 | -0.133 | 0.135 |
| Strategies | -0.239 | 0.007 | -0.156 | 0.08 | -0.003 | 0.974 | -0.096 | 0.282 |
| Impulse | -0.272 | 0.002 | -0.156 | 0.081 | -0.047 | 0.6 | -0.12 | 0.177 |
| Nonacceptance | -0.193 | 0.03 | -0.119 | 0.183 | -0.028 | 0.754 | -0.025 | 0.781 |
| Awareness | -0.189 | 0.033 | -0.205 | 0.021 | 0.023 | 0.796 | -0.044 | 0.623 |
| Clarity | -0.174 | 0.051 | -0.121 | 0.176 | -0.105 | 0.24 | -0.163 | 0.067 |

*Note.* DERS:Difficulties with Emotion Regulation Scale; PHP cingulum : parahippocampal cingulum bundle; FA: fractional anisotropy.

Supplement Table 2. Associations between FA of cingulum bundle and DERS, with HAMD scores as nuisance covariates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 　 |  dorsal cingulum (L) |  dorsal cingulum (R) |  PHP cingulum (L) | PHP cingulum (R) |
| 　 | *r* | *P* | *r* | *P* | *r* | *P* | *r* | *P* |
| DERS total scores | -0.209 | 0.019 | -0.152 | 0.09 | -0.104 | 0.245 | -0.216 | 0.015 |
| Nonacceptance | -0.123 | 0.171 | -0.073 | 0.416 | -0.074 | 0.413 | -0.075 | 0.407 |
| Goals | -0.148 | 0.099 | -0.108 | 0.23 | -0.087 | 0.332 | -0.174 | 0.051 |
| Impulse | -0.22 | 0.013 | -0.116 | 0.197 | -0.109 | 0.224 | -0.21 | 0.018 |
| Awareness | -0.129 | 0.15 | -0.177 | 0.048 | -0.004 | 0.961 | -0.084 | 0.351 |
| Strategies | -0.176 | 0.049 | -0.116 | 0.195 | -0.054 | 0.547 | -0.183 | 0.04 |
| Clarity | -0.098 | 0.277 | -0.074 | 0.411 | -0.171 | 0.056 | -0.247 | 0.005 |

*Note.* DERS: Difficulties with Emotion Regulation Scale; HAMD: Hamilton rating scale for depression; PHP cingulum : parahippocampal cingulum; FA: fractional anisotropy.

Supplement Table 3. Associations between FA of cingulum bundle and DERS, with age, gender, Illness duration, and HAMD scores as nuisance covariates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | dorsal cingulum (L) | dorsal cingulum (R) | PHP cingulum (L) | PHP cingulum (R) |
|  | *r* | *P* | *r* | *P* | *r* | *P* | *r* | *P* |
| DERS total scores | -0.185 | 0.039 | -0.135 | 0.136 | -0.072 | 0.426 | -0.192 | 0.033 |
| Nonacceptance | -0.15 | 0.096 | -0.095 | 0.293 | -0.084 | 0.354 | -0.077 | 0.396 |
| Goals | -0.152 | 0.092 | -0.109 | 0.227 | -0.086 | 0.344 | -0.183 | 0.062 |
| Impulse | -0.169 | 0.061 | -0.078 | 0.39 | -0.05 | 0.583 | -0.156 | 0.083 |
| Awareness | -0.092 | 0.308 | -0.147 | 0.103 | 0.026 | 0.773 | -0.072 | 0.43 |
| Strategies | -0.159 | 0.078 | -0.104 | 0.249 | -0.025 | 0.783 | -0.162 | 0.073 |
| Clarity | -0.069 | 0.446 | -0.056 | 0.537 | -0.145 | 0.108 | -0.228 | 0.011 |

*Note.* DERS: Difficulties with Emotion Regulation Scale; HAMD: Hamilton rating scale for depression; PHP cingulum : parahippocampal cingulum; FA: fractional anisotropy.

Supplement Table 4. ROC analysis was conducted to assess the ability of the mean FA of CB and the total DERS scores to discriminate between the MDD/NSSI+ and MDD/NSSI- groups.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| variable | *AUC* | *SE* | *P* |  *95% CI* |
|  dorsal cingulum (left) | 0.703 | 0.053 | 0.001 | 0.599-0.807 |
|  dorsal cingulum (right) | 0.704 | 0.053 | 0.001 | 0.599-0.808 |
|  PHP cingulum (left) | 0.662 | 0.056 | 0.007 | 0.599-0.772 |
| PHP cingulum (right) | 0.654 | 0.056 | 0.010 | 0.599-0.765 |
| DERS total scores | 0.696 | 0.054 | 0.001 | 0.599-0.801 |

*Note.* DERS=Difficulties with the Emotion Regulation Scale; CB:cingulum bundle; PHP cingulum: parahippocampal cingulum; AUC: area under the curve; ROC: Receiver-operating characteristics.

Supplement Table 5. mean FA of WM(UF, SLF, and ATR) between MDD/NSSI+, MDD /NSSI- and healthy controls subgroups.

|  |  |  |  |
| --- | --- | --- | --- |
| variable | MDD/NSSI+ | MDD/NSSI- | HC |
| FA of ATR(L) | 0.488(0.024) | 0.499(0.021) | 0.494(0.025) |
| FA of ATR(R) | 0.507(0.026) | 0.514(0.023) | 0.513(0.026) |
| FA of SLF(L) | 0.507(0.029) | 0.523(0.033) | 0.517(0.031) |
| FA of SLF(R) | 0.51(0.03) | 0.527(0.028) | 0.524(0.029) |
| FA of UF(L) | 0.539(0.031) | 0.54(0.03) | 0.534(0.03) |
| FA of UF(R) | 0.53(0.036) | 0.525(0.036) | 0.531(0.028) |

*Note.* The data are shown as mean (SD). SD : standard deviation; HC: healthy controls; MDD/NSSI-: patients without non-suicidal self-injury group; MDD/NSSI+: patients with non-suicidal self-injury; ATR: Anterior Thalamic Radiation; SLF: superior longitudinal fasciculus; UF: uncinate fasciculus.

Supplement Table 6. ANCOVAs controlling for age, gender, and depression severity comparing mean FA of WM(UF, SLF, and ATR) between MDD/NSSI+, MDD /NSSI- and healthy controls subgroups.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| variable | ATR(L) | ATR(R) | SLF(L) | SLF(R) | UF(L) | UF(R) |
| *B* | *P* | *B* | *P* | *B* | *P* | *B* | *P* | *B* | *P* | *B* | *P* |
| Intercept | 0.457 | <0.001 | 0.457 | <0.001 | 0.451 | <0.001 | 0.443 | <0.001 | 0.479 | <0.001 | 0.494 | <0.001 |
| boy | -0.003 | 0.521 | 0 | 0.601 | 0 | 0.965 | 0.003 | 0.653 | -0.005 | 0.386 | 0.002 | 0.749 |
| MDD/NSSI- | 0.011 | 0.053 | 0.007 | 0.214 | 0.013 | 0.064 | 0.015\* | 0.017 | 0 | 0.952 | -0.004 | 0.577 |
| HC  | 0.01 | 0.328 | 0.013 | 0.242 | 0.012 | 0.359 | 0.024\* | 0.052 | -0.002 | 0.855 | 0.012 | 0.426 |
| age | 0.002 | 0.034\* | 0.002 | 0.002\*\* | 0.003 | 0.003\*\* | 0.003\*\* | 0.001\*\* | 0.003 | 0.001\*\* | 0.001 | 0.254 |
| HAMD | 0 | 0.439 | 0 | 0.207 | 0 | 0.408 | 0.001 | 0.091 | 0 | 0.433 | 0.001 | 0.246 |

*Note.*  HC: healthy controls; MDD/NSSI-: patients without non-suicidal self-injury group; MDD/NSSI+: patients with non-suicidal self-injury; HAMD:Hamilton Depression Rating Scale; ATR: Anterior Thalamic Radiation; SLF: superior longitudinal fasciculus; UF: uncinate fasciculus.