|  |  |  |  |
| --- | --- | --- | --- |
| Region | *Peak MNI Coordinates* | *Zpeak* | *k* |
|  | **x** | **y** | **z** |  |
| Parietal R | 46 | -54 | 52 | 5.36 | 331 |
| OFC M | -4 | 36 | -24 | 4.02 | 81 |
| dlPFC R | 40 | 52 | 26 | 4.81 | 254 |
| mPFC | 2 | 54 | -2 | 5.56 | 321 |
| Parietal L | -58 | -50 | 36 | 4.78 | 292 |
| ACC | -2 | 10 | 42 | 5.14 | 291 |
| OFC R | 42 | 52 | 6 | 4.70 | 260 |
| OFC L | -40 | 40 | -4 | 4.71 | 253 |
| dlPFC L | -42 | 8 | 40 | 4.36 | 267 |

***Supplementary File 1a.***

|  |  |  |  |
| --- | --- | --- | --- |
| Region | *Peak MNI Coordinates* | *Zpeak* | *k* |
|  | **x** | **y** | **z** |  |  |
| Parietal R | 48 | -38 | 54 | 6.45 | 388 |
| mPFC | 0 | 52 | 22 | 5.32 | 388 |
| dlPFC R | 42 | 28 | 28 | 5.50 | 389 |
| Parietal L | -38 | -38 | 54 | 5.16 | 377 |
| OFC R | 26 | 56 | -10 | 4.72 | 238 |
| dlPFC L | -40 | 20 | 32 | 5.57 | 327 |
| Hippocampus R | 40 | -18 | -10 | 4.89 | 213 |
| OFC L | -48 | 46 | -4 | 5.18 | 275 |
| ACC | -2 | 24 | 32 | 4.75 | 330 |
| OFC M | 0 | 46 | -20 | 4.33 | 142 |

***Supplementary File 1b.***

|  |  |  |  |
| --- | --- | --- | --- |
| Region | *Peak MNI Coordinates* | *Zpeak* | *k* |
|  | **x** | **y** | **z** |  |  |
| OFC R | 32 | 46 | -10 | 5.26 | 106 |
| mPFC | 6 | 50 | -2 | 5.94 | 158 |

***Supplementary File 1c.***

|  |  |  |  |
| --- | --- | --- | --- |
| Region | *Peak MNI Coordinates* | *Zpeak* | *k* |
|  | **x** | **y** | **z** |  |  |
| Ventral Striatum L | -10 | 6 | -10 | 5.64 | 140 |
| Ventral Striatum R | 8 | 16 | -12 | 5.33 | 112 |
| vmPFC | 4 | 56 | -8 | 4.99 | 27 |

***Supplementary File 1d.***

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model No.** | **Model** | **bias** | **m** | **prior** | **a** | **apos** | **aneg** | **decay** | **CA** | **CApos** | **CAneg** | **No. params** |
| 1 | Baseline | $$×$$ | $$×$$ |  | $$×$$ |  |  |  |  |  |  | 3 |
| 2 | Decay | $$×$$ | $$×$$ | $$×$$ | $$×$$ |  |  | $$×$$ |  |  |  | 5 |
| 3 | V-LR, Decay | $$×$$ | $$×$$ | $$×$$ |  | $$×$$ | $$×$$ | $$×$$ |  |  |  | 6 |
| 4 | V-LR, CA | $$×$$ | $$×$$ | $$×$$ |  | $$×$$ | $$×$$ |  | $$×$$ |  |  | 6 |
| 5 | V-CA | $$×$$ | $$×$$ | $$×$$ | $$×$$ |  |  |  |  | $$×$$ | $$×$$ | 6 |
| 6 | V-CA, V-LR | $$×$$ | $$×$$ | $$×$$ |  | $$×$$ | $$×$$ |  |  | $$×$$ | $$×$$ | 7 |

***Supplementary File 1e.***

|  |  |  |  |
| --- | --- | --- | --- |
| **Model Parameter** | **Parameter Description** | **Upper-bound**  | **Lower-bound** |
| bias | Baseline investment tendencies. | 2.0 – Baseline tendency to invest full amount.  | 0 – Baseline tendency to invest minimal amount. |
| m | Slope of logistic function associating Vt and predicted investments. | 2.0 – Little evidence needed to shift investment strategies.  | 0.2 – More evidence required before shifting strategies.  |
| prior | Initial value of V on trial 1 before observing any outcomes. | 2.0 –Invest maximally on trial 1.  | 0 – Invest minimally on trial 1.  |
| a | Learning rate quantifying degree of update to state Vt from PE term.  | 1.0 – PEs maximally updated state Vt.  | 0 – No influence of PEs on state Vt |
| apos | Learning rate for gains. | 1.0 – PEs > 0 maximally updated state Vt. | 0 – PEs > 0 did not update state Vt. |
| aneg | Learning rate for losses. | 1.0 – PEs < 0 maximally updated state Vt. | 0 – PEs < 0 did not update state Vt. |
| CA | Credit assignment parameter capturing spread of credit across states.  | 1.0 – PEs only update Vt of relevant state.  | 0 – PEs update Vt of all states.  |
| CApos | Credit assignment for gains. | 1.0 – PEs > 0 only update Vt of the relevant state. | 0 – PEs > 0 update Vt of all states. |
| CAneg | Credit assignment for losses.  | 1.0 – PEs < 0 only update Vt of the relevant state. | 0 – PEs < 0 update Vt of all states. |
| decay | Degree of forgetting  | 1.0 – Complete decay of Vt. | 0 – No forgetting.  |

***Supplementary File 1f.***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Model No** | **Model** | **Task** | **Mean AIC** | **SE** |
| 1 | Baseline | SocialBandit | -324.93-349.11 | 30.8421.00 |
| 2 | Decay | SocialBandit | -232.06-285.99 | 19.5117.75 |
| 3 | V-LR, Decay | SocialBandit | -203.83-277.41 | 16.6818.55 |
| 4 | V-LR, CA | SocialBandit | -202.68-259.47 | 17.0017.30 |
| 5 | V-CA | SocialBandit | -208.54-273.25 | 16.7517.93 |
| 6 | V-LR, V-CA | SocialBandit | -200.18-258.25 | 16.6516.99 |

***Supplementary File 1g.***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Model No** | **Model** | **Task** | **Δ AIC** | **SE** |
| 1 | Baseline | SocialBandit | 127.6692.85 | 25.1714.98 |
| 2 | Decay | SocialBandit | 34.7929.73 | 9.355.28 |
| 3 | V-LR, Decay | SocialBandit | 6.5621.16 | 4.775.23 |
| 4 | V-LR, CA | SocialBandit | 5.403.32 | 4.944.79 |
| 5 | V-CA | SocialBandit | 11.2616.99 | 3.325.71 |
| 6 | V-LR, V-CA | SocialBandit | 2.912.00 | 4.884.56 |

***Supplementary File 1h****.*