Supplementary file 4. *GLMs for fMRI data.*

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| **NAME** | **REGRESSORS** |
| GLM0 | [Highest Reward choice; Lower Reward choice] |
| GLM0relexp | $$[ First free choice;RQ\_{t+1, j}\left(c\right);Q\_{t+1, j}\left(c\right);24 motion regressors]$$ |
| GLM0exprel | $$[ First free choice;Q\_{t+1, j}\left(c\right);RQ\_{t+1, j}\left(c\right);24 motion regressors]$$ |
| GLM0rew | $$[ First free choice;RQ\_{t+1, j}\left(c\right);Max Q\_{t+1, j};Min Q\_{t+1, j};mean Q\_{t+1, j} ;24 motion regressors]$$ |
| GLM1 | $$[First free choice;RQ\_{t+1, j}\left(c\right);24 motion regressors]$$ |
| GLM1bis | $$[First free choice;Q\_{t+1, j}\left(c\right);24 motion regressors]$$ |
| GLM2 | $$[First free choice;-I\_{t, j}\left(c\right);24 motion regressors]$$ |
| GLM3 | $$[First free choice;-I\_{t, j}\left(c\right);RQ\_{t+1, j}\left(c\right);24 motion regressors]$$ |
| GLM3bis | $$[First free choice;RI\_{t, j}\left(c\right);-I\_{t, j}\left(c\right);RT\_{t, j}; RQ\_{t+1, j}\left(c\right);24 motion regressors]$$ |
| GLM4 | $$ [ First free choice;RQ\_{t+1, j}\left(c\right);I\_{t, j}\left(c\right);24 motion regressors]$$ |
| GLM4bis | $$[ First free choice; Q\_{t+1, j}\left(c\right);-I\_{t, j}\left(c\right); 24 motion regressors]$$ |
| GLM4rew | $$ [ First free choice;additional reward computations;RQ\_{t+1, j}\left(c\right);I\_{t, j}\left(c\right);24 motion regressors]$$ |
| GLM4diff | $$[ First free choice;aSD;RT;switch/stay;RQ\_{t+1, j}\left(c\right);I\_{t, j}\left(c\right);24 motion regressors]$$ |
| GLM5 | $$[Defulat Option;NoDefault]$$ |
| GLM6 | $$[ First free choice;Instrumental Info\left(c\right);-I\_{t, j}\left(c\right);24 motion regressors]$$ |
| GLM7 | $$[ First free choice;-I\_{t, j}\left(c\right); Instrumental Info\left(c\right);24 motion regressors]$$ |
| GLM8 | $$[ First free choice; P(c/V\_{t, j}\left(c\_{i}\right));24 motion regressors]$$ |
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