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Data supplement

Table DS1 Description of the neuropsychological test battery

Test	Description	Performance measure
Stockings of Cambridge Test of planning sensitive to DLPFC function.[1] Lesions of DLPFC impair performance.[2]	Participants are required to move coloured 'balls' in an arrangement on the bottom half of the screen in order to match a goal arrangement on the top half of the screen. Each problem has a specified minimum number of moves that increases with difficulty (from two to five moves). For each planning trial a 'yoked control' condition is employed where individuals are required to replicate the moves made on the earlier planning trials.	Mean number of moves made and planning time for the top two difficulty levels (four and five moves). Planning time (recorded in seconds) was the time between the presentation of the problem and the first touch, minus the corresponding motor initiation time calculated from the yoked control task.
Intra-/extra-dimensional Test of set shifting sensitive to DLPFC function.[3] Lesions of DLPFC impair performance.[2]	Participants are required to learn a series of visual discriminations, using feedback, in which one of two stimulus dimensions are relevant and the other is not. Stages 1 to 7 (intra-dimensional stages) – participants attend to different examples within the same dimension in order to learn progressive discriminations. Stages 8 and 9 (extra-dimensional stages) – participants have to shift attention to a previously irrelevant dimension. Each stage has a criterion of six correct trials in order to move onto the next stage.	Percentage of participants in each group reaching the criterion for each stage.[a] Based on Mitchell[4,b] mean errors[c] on the extra-dimensional shift stage and the combined reversal stage errors were calculated and compared across groups.
Stop Task test of behavioural inhibition – activates VLPFC brain regions in neuroimaging studies[5] – focal VLPFC lesions impair performance.[6]	In this task a motor response is either initiated (Go) or inhibited (Stop). The task has 80 trials divided into two blocks of 90, of which 30% are Stop trials. On Go trials a picture of a plane appears for 1000 msec and participants are required to press a response button as quickly as they can. On Stop trials, a picture of a plane appears for 250 msec and is then followed by the Stop signal (picture of a bomb) for 300 msec. On these trials, participants are required to withhold their response to the plane. The interstimulus interval for all trials is 650 msecs.	Probability of inhibition (percentage of Stop trials where a response was correctly inhibited).[d]

DLPFC, dorsolateral prefrontal cortex; VLPFC, ventrolateral prefrontal cortex.
a. Any participants who completed less than 5 stages were excluded from the analysis.
b. Mitchell suggests the extra-dimensional shift stage of this task is sensitive to DLPFC function, while the reversal stages tap into VLPFC function.
c. Participants who did not complete all stages of the task were given pro-rated error scores of 25 for each stage that they failed to complete.
d. Any participant who made omission errors on over half of the Go trials at the same time as producing a probability of inhibition of >90% was excluded from the analysis, as it is likely that they were not completing the task properly. Four participants were excluded from the analysis under these criteria.

References

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