



Updating relies on the right hemisphere

- **Updating** requires mental models to be 'tested' against incoming data. (1) detecting mismatch between model and incoming information (2) revising model based on mismatches
- **Spatial and temporal impairments in right brain damaged** patients (impaired SWM, motor imagery, etc.) construed as updating deficits
- □ Do RBD patients demonstrate a generic updating deficit? Played classic children's game rock, paper, scissors against a computer opponent that played randomly or with a biased strategy.
- □ Can updating deficits be differentiated from set shifting? Contrasted rock, paper, scissors with a version of the Wisconsin Card Sorting Task





Hemispheric effects on strategy updating Elisabeth Stöttinger¹, Alex Filipowicz¹, Britt Anderson¹², James Danckert¹

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Building a model vs. shifting – BCST performance



Patients completed 64 sorting trials of a modified computerised version of the WCST, with categories switching after 10 correct sorts (Nelson 1976; Piper et al. 2011: (http://pebl.sourceforge.net/battery.html)

BCST Overview	RBD Mean (SD)	LBD Mean (SD)
Categories Completed	1.3 (1.2)	2.1 (1.2)
Correct Responses	30.8 (11.4)	41.5 (7.6)*
Perseverative Errors	8.9 (7.6)	13.8 (7.1)
Non-perseverative Errors	24.3 (16.9)	8.7 (5.1)*
Total Errors	33.2 (11.4)	22.5 (7.6)*
<u># Trials to Complete 1st Category</u>	37.1 (24.0)	13.3 (5.7)*



Set-Shifting

RBDs and LBDs are equally likely to shift their mental set from 'it is colour' to i.e. 'it is shape'.



Model Building

RBD are impaired in getting the first category

Building, updating or shifting? What's the problem?



Winning isn't everything!

Do RBD patients have a difficul learning?

Patients played 150 trials with an 80% win rate (the game was rigged!)

Even after 80% wins one patient failed to update

- □ RBD impairment in the RPS game is not due to
- (1) a general problem in building models
- (3) set-shifting: RBD can shift mental set
- frequency`
- **Future Research:**
- healthy undergrads (see poster E104) and RBD

Acknowledgements

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Number of trials

Bias (rock 80%)

Switch after Strong





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General conclusion

(2) a deficit in reinforcement learning (i.e., winning had no influence)

i.e., from colour to shape (Berg Card Sorting Test)

or from 80% scissors to 80% paper (Rock-Paper-Scissors)

□ RBD have trouble updating model types; i.e., from 'random' to a `biased

Updating (pattern to frequency) vs. Set-shifting (frequency to frequency) in





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LBD

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Completed categories

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Getting the first category – impaired in RBDs



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