

How sequential changes in reward magnitude modulate cognitive flexibility:

Evidence from voluntary task switching

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Experiment 1

Short description: 80 % forced-choice trials and 20 % free-choice trials; low and high reward changed randomly from trial to trial; free-choice trials were always high reward trials, either increase or remain high

Experiment 2

Short description: Same procedure as in Experiment 2 except that the reward cue changed on every trial with four different shades of grey announcing a low reward and four different colors announcing a high reward.

Experiment 3

Short description: Same procedure as in Experiment 3 except that again the reward cue changed on every trial. In addition, a speed instruction was used in both low and high reward trials.

Experiment 4

Short description: Same procedure as in Experiment 2 except that free-choice trials were always low reward trials, either remain low or decrease.

Variables

- Subject: participant ID
- Block: 1 = single task practice blocks, 2 = forced task switching practice block, 3 = baseline block, 4 = break, 5 = reward block
- TrialNr: current trial number in a given block
- TrialType: 1 = forced-choice, 2 = free-choice
- Mode: Practice = single task and forced task switching practice blocks, Baseline = no reward block with mixture of forced- and free-choice trials, Test = reward block with mixture of forced- and free-choice trials
- Rseq: reward sequence; 1 = remain low, 2 = increase, 3 = remain high, 4 = decrease
- Target.ACC: accuracy; 1 = correct response, 0 = error
- Target.RT: reaction time in ms

- Task_n: pre-determined or chosen task in a given trial; 1 = upper task, 2 = lower task; participants with an odd ID had the number task as upper task and participants with an even ID the letter task; task in free-choice trials was coded based on the response hand used in a given trial
- PrevTask: task in trial n-1
- Transition: 1 = repetition, 2 = switch; Transition was coded based on variables Task_n and PrevTask

Experiment 5

Short description: 100 % free-choice trials; global instruction to perform both tasks about equally often but in random order; low and high reward changed randomly from trial to trial

Variables

- Subject: participant ID
- Task1: upper task; Zahlen = number task, Buchstaben = letter task
- BlockNr: 1 = first reward block, 2 = second reward block, 3 = third reward block
- Mode: Practice = practice blocks, Baseline = no reward block, Test = reward blocks
- Reward_n: reward magnitude in a given trial; 1 = low, 2 = high
- PrevReward: reward magnitude in trial n-1
- RSeq: reward sequence; 1 = remain low, 2 = increase, 3 = remain high, 4 = decrease
- Target.ACC: accuracy; 1 = correct response, 0 = error
- Target.RT: reaction time in ms
- TrialNr: current trial number in a given block (baseline and reward blocks only)
- Task_n: chosen task in a given trial; 1 = upper task (see Variable Task1), 2 = lower task; task was coded based on the response hand used in a given trial
- PrevTask: chosen task in trial n-1
- Transition: 1 = repetition, 2 = switch; Transition was coded based on variables Task_n and PrevTask