

Examples of Simulations with Rapid-REM (Schultheis, Thorwart and Lachnit, 2007)

In the following, simulations with Rapid-REM for two discrimination learning tasks are presented. The discrimination tasks are chosen based on examples in Wagner(2003). All files necessary to simulate can be downloaded from <http://www.staff.uni-marburg.de/~lachnit/Rapid-REM/>.

1. Differential summation experiment

Responding to the compound ABC after training with the single stimuli (A+, B+, C+) or with the two-stimulus compounds (AB+, AC+, BC+).

a. single stimulus training-group

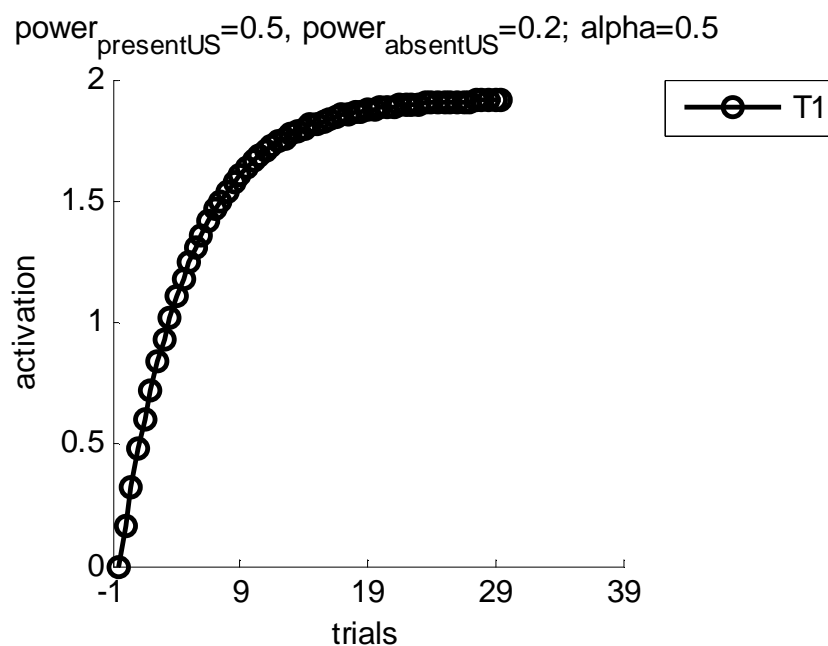


Figure 1. Simulated course of response to ABC after training with A+,B+,C+. Proportion of replaced elements between all elemental stimuli is $r=.2$.

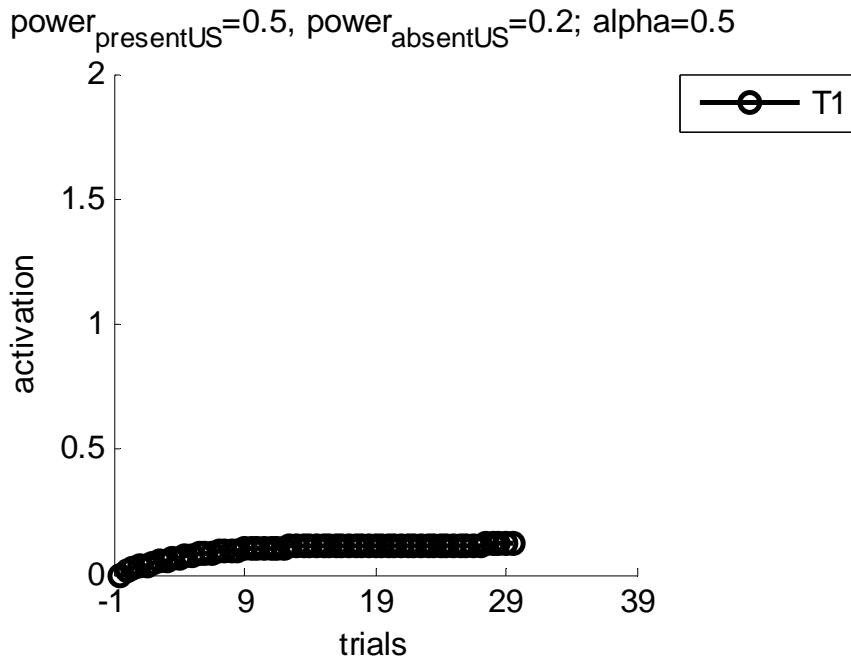


Figure 2. Simulated course of response to ABC after training with A+,B+,C+. Proportion of replaced elements between all elemental stimuli is $r=.8$.

b. compound training-group

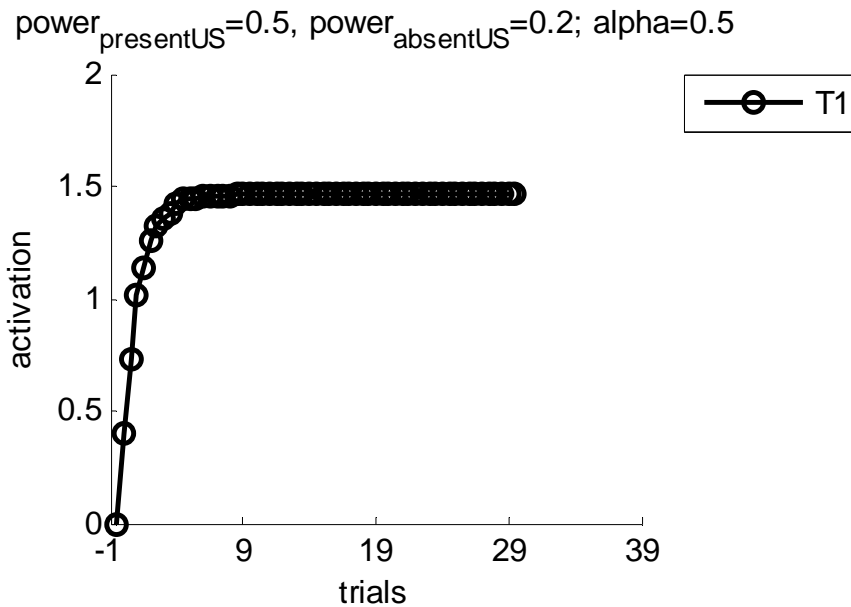


Figure 3. Simulated course of response to ABC after training with AB+,AC+,BC+-. Proportion of replaced elements between all elemental stimuli is $r=.2$.

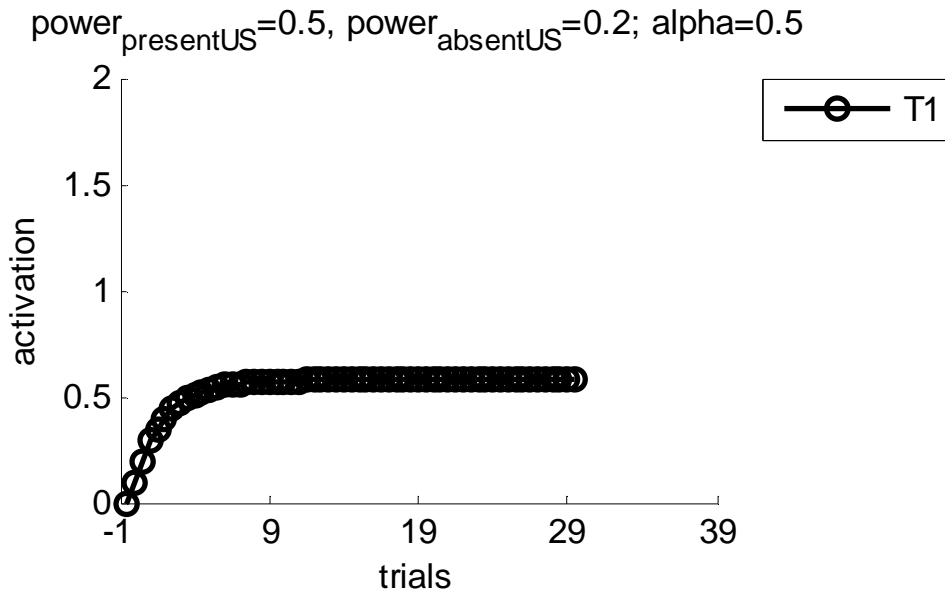


Figure 4 Simulated course of response to ABC after training with AB+,AC+,BC+. Proportion of replaced elements between all elemental stimuli is $r=.8$.

2. Differential external inhibition

Responding to the compound ABC after discrimination training with either single stimuli (A+, B+, C-) or paired stimuli (AC+, BC+, C-)

a. single stimulus training-group

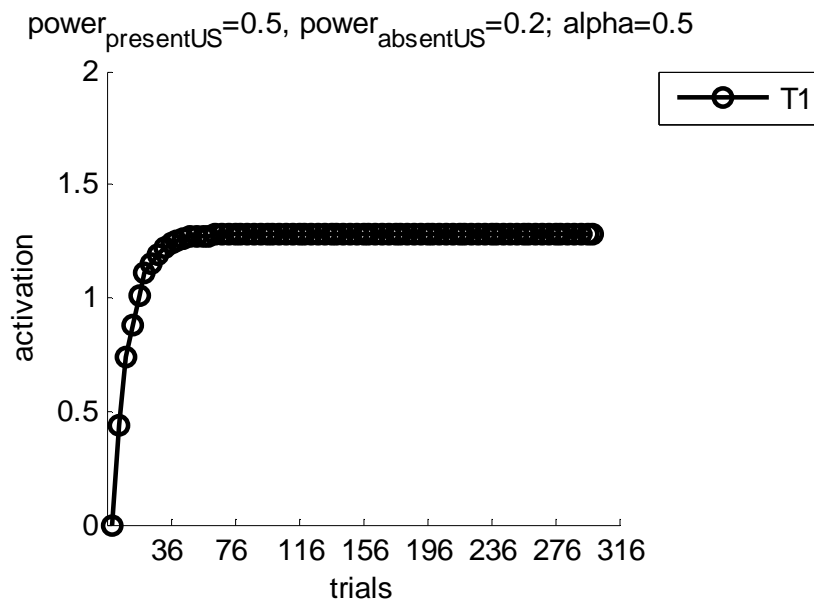


Figure 5. Simulated course of response to ABC after training with A+,B+,C-. Proportion of replaced elements between all elemental stimuli is $r=.2$.

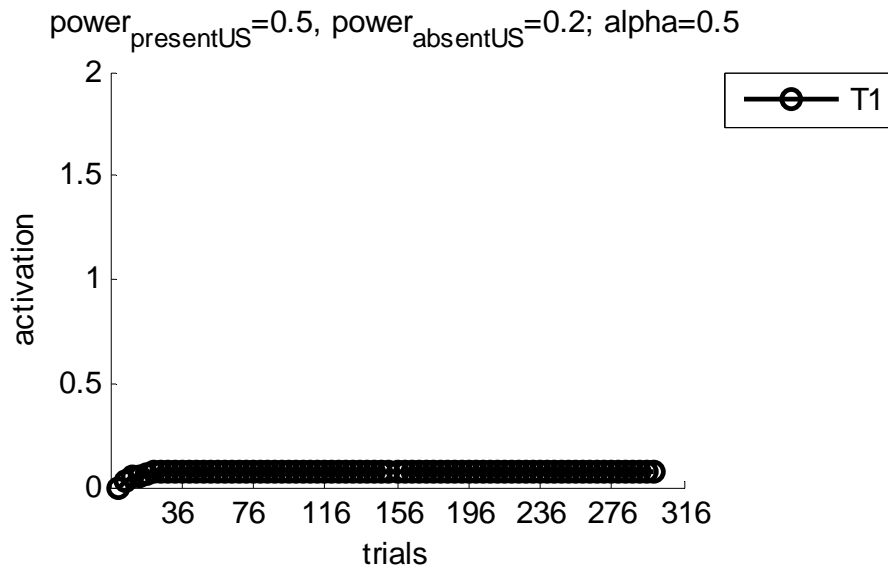


Figure 6. Simulated course of response to ABC after training with A+,B+,C-. Proportion of replaced elements between all elemental stimuli is $r=.8$.

b. paired stimulus training-group

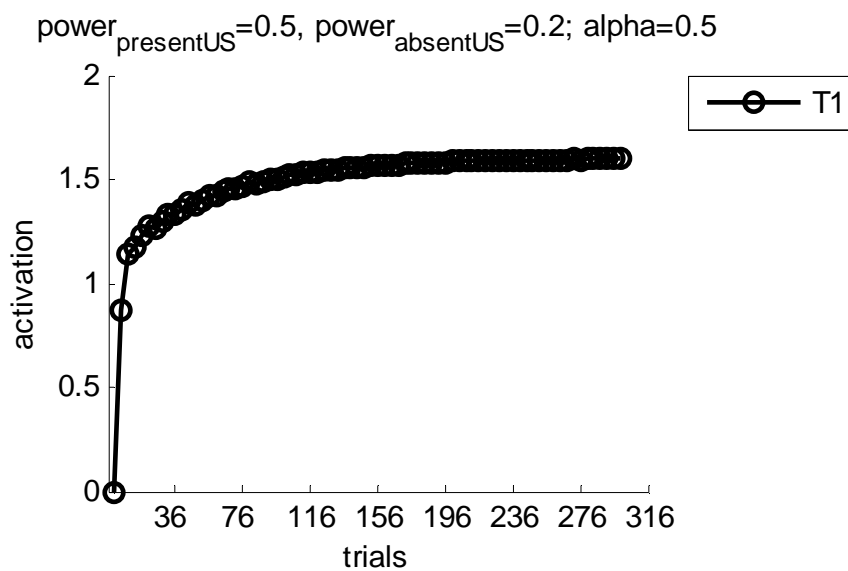


Figure 7. Simulated course of response to ABC after training with AC+,BC+,C-. Proportion of replaced elements between all elemental stimuli is $r=.2$.

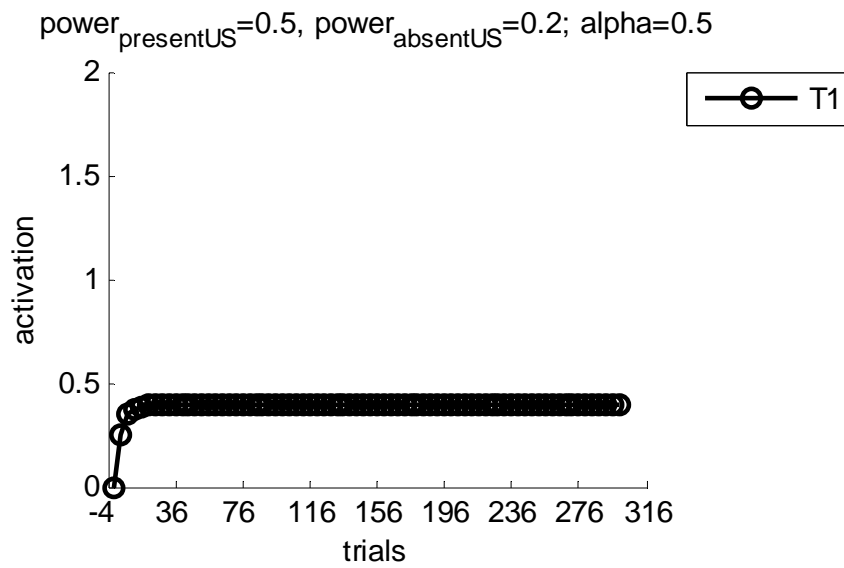


Figure 8. Simulated course of response to ABC after training with AC+,BC+,C-. Proportion of replaced elements between all elemental stimuli is $r=.8$.

References:

- Schultheis, H., Thorwart, A., & Lachnit, H. (2007). Rapid-REM - A Matlab Simulator of the Replaced Elements Model. *Behavior Research Methods* (under revision).
- Wagner, A. R. (2003). Context-sensitive elemental theory. *Quarterly Journal of Experimental Psychology*, *56B* (1), 7–29.