

MATE – core assumptions

Desk research – what do we know?

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Chess training usability

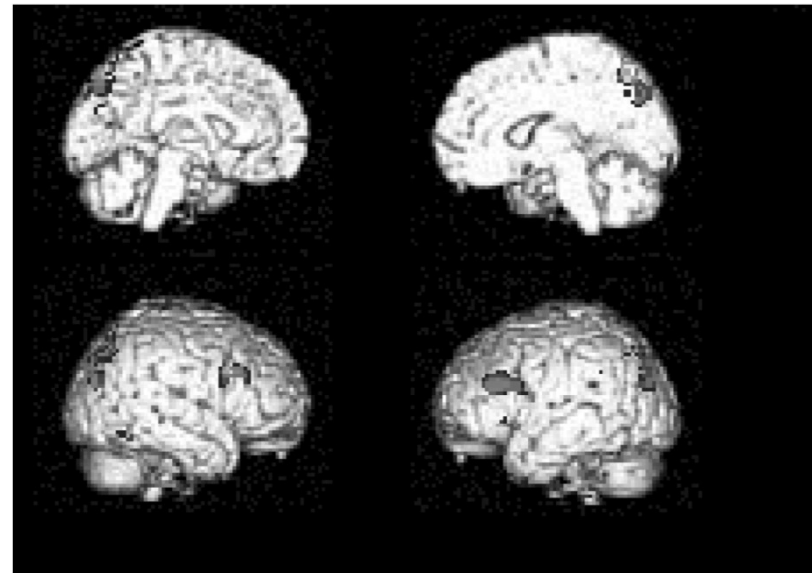
- „it was found that chess improves cognitive abilities, coping and problem-solving capacity, and even socioaffective development of children and adolescents who practice it. The results are modulated, particularly in the area socioaffective, by the personal profile of students who choose practice this activity”
(Aciego, García, & Betancort, 2012)

Chunks and templates

- „Chess experts are able to reconstruct with high accuracy a game position that had been shown for only a few seconds. However, when the pieces are randomly placed throughout the board, experts perform only slightly better than novices”
- During study and practice, experts store domain-specific **“chunks” (perceptual patterns that can be used as units of meaning)** in their long-term memory. When this practice becomes serious and continuous, **some of the chunks evolve into more complex structures called “templates,” consisting of core information supplemented with slots in which more information (perceptual or abstract) can be added** (Campitelli, Gobet, Head, Buckley, & Parker, 2007)

Brain localization of memory chunks in chessplayers

- Chessplayers access long-term memory chunks of domain-specific information, which are stored **in the temporal lobes**
- The recognition memory tasks activate working memory areas in the frontal and parietal lobes (Campitelli, Gobet, Head, Buckley, & Parker, 2007)



Surprise attracts the eyes and binds the gaze

- Deviations from expectations bias attentional priorities and lead to enhanced processing of the deviating stimulus (Horstmann & Herwig, 2015)



We plan to:

1. Prepare 500 stimuli (350 chess and 150 cognitive, dynamic, attractive)
2. Select most „chunks-loaded” stimuli using ET, EEG and SC
3. Construct and validate online test of chess and cognitive skills / capabilities
4. Create a training content useful in school-based education with use of chess and cognitive Training
5. Elaborate methodical handbook for teachers, on how to use MATE tool in daily education of school subjects
6. Create, validate and implement MATE Test-and-Training online tool and handbook in educational practice

Main dimensions:

1. Chess:

1. A. Test your identification of squares, lines, rows on the board
2. B. Develop your pieces in opening
3. C. Find mate in one move
4. D. Find mate in two moves
5. E. Find winning combination
6. F. Find winning way in ending
7. G. Repeat the sequence of moves

1. Cognitive:

1. A. Goal driven attention focus
2. B. Attention sustainability
3. C. Structure recognition in complex, distracted stimulus
4. D. Memory (number of remembered and recognized chunks – complex structures)
5. E. Choosing the right answer in social situation
6. F. Heuristics thinking

Selected deadlines:

- **First set of stimuli 28.02.2017**
- **First set of validated (ET + EEG + SC) stimuli 30.06.2017**
- **First version of online test tool (from 01.05.2017) 30.06.2017**
- **Final version of online test tool 30.10.2017**
- Psychometric validation of the online test 30.04.2018
- Chess and cognitive training content (from 01.05.2017) 30.04.2018
- Online version of chess and cognitive training 30.06.2018
- Handbook for teachers (from 01.12.2017) 30.11.2018
- Training for teachers - 30.10.2018
- Testing and validation of the set of tools, report 30.06.2019