Typical & Atypical Cognitive Development, Spring 2019

Unit 4: Questions for the reflection assignment
The purpose of these questions is to guide and scaffold the reading and discussion of the slides for today's session, which are also available on the course homepage.
Please send your individual answers to each of the six questions to paul.seitlinger@tlu.ee with the subject "CogniDev_Article4_YourName" by 19th of April 2019 the latest.

Topic I – Neurophysiological evidence of EF training effects
In addition to the slides, you can find more details on this topic in the research article of Jolles et al. (2012; https://core.ac.uk/download/pdf/82647359.pdf)

- Question 1: Slide 7 describes and illustrates the working memory task that is applied in the study of Jolles et al. (2012). Why is the "Backward" condition of this task more demanding than the "Forward" condition?

- Question 2: In the same experiment (Jolles et al., 2012), the authors find that after practice, the performance differences (in the working memory task) between adults and children are no longer significant (see e.g. Slide 9). Describe in your own words how this behavioral result is reflected by the discovered neurophysiological patterns as e.g. summarized on the Slides 10 and 11.

- Question 3: How and to which extent do these findings relate to the outcomes of the study conducted by Meixner et al. (2019), which we have discussed in the previous unit and which evidenced reciprocal relations between reading comprehension and EF?

Topic II – Principles of effective EF training programs
In addition to the slides, you can find more details on this topic in the review of Diamond and Ling (2016; https://www.ncbi.nlm.nih.gov/pubmed/26749076)

- Question 4: On today's Slides (15-18) and in the article of Diamond and Ling (2016), different principles for the design of effective EF programs are mentioned. Discuss both the advantages and disadvantages of Computerized Cognitive Training approaches in the light of these principles.

- Question 5: Why can we expect programs that integrate physical exercise and mindfulness to benefit EF? Discuss your answer also from the perspective of the neuroconstructivist framework of cognitive development.

- Question 6: In the movie *Three Billboards Outside Ebbing, Missouri*, the character Willoughby writes a letter to his colleague Dixon to tell him:

  "*Because through love comes calm, and through calm comes thought*."

  Which results from neurophysiological research on affective influences on the PFC as well as from research on the effectiveness of EF training programs lend scientific evidence of this statement?