



Univerza v Mariboru

Filozofska fakulteta

BRAIN
GAME
CENTER



University
of Maribor
Global/Collaboration



Northeastern
University

The Department of Psychology invites you to
attend guest lectures by esteemed scholars:

prof. Susanne Jeaggi

Lecture 1: *Domain-specific and Domain-general Approaches
to Promote Learning in Educational Context*

prof. Aaron Seitz

Lecture 2: *Challenges and Opportunities to Digital
Assessment and Training*



Wednesday,
June 11, 2025
11:00 AM



Amphitheatre/FF



Susanne M. Jaeggi, PhD

Title: Domain-specific and Domain-general Approaches to Promote Learning in Educational Context

Abstract: I will present work that has been focusing on the reciprocal relationship between domain-specific and domain-general skills, and how they can be leveraged to promote learning and math acquisition. Correlational work has indicated a reciprocal relationship between domain-specific number knowledge and domain-general cognitive processes, including executive functions; however, little is known about their relative and causal contributions to math learning. I will report the results of a series of studies in which we tested the individual and additive benefits of playing games targeting domain-specific and/or domain-general skills to improve mathematical learning and executive functions in young children. Collectively, our results provide causal evidence for the reciprocal relations between math and executive functions. Specifically, our data show that playing games targeting executive functions leads to improvements in both, non-trained executive functions as well as mathematical skills. We also found that playing games targeting numerical skills promote both, mathematical knowledge and executive functions. Finally, we also found evidence that playing a combination of executive function and math games result in the most sustained benefits. Our findings illustrate the importance of targeting both domain-general and domain-specific skills in order to maximize the benefits of interventions to promote learning and mathematical knowledge. Finally, I will emphasize the important role of individual differences that can provide important insights to inform the development of more effective interventions to promote generalized learning, and I will discuss the implications of our findings for learning and plasticity across the lifespan.

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Bio: Susanne M. Jaeggi is Professor at Northeastern University, where she's affiliated with the Center for Cognitive and Brain Health, and the Departments of Psychology, Applied Psychology, and Music. She co-directs the Brain Game Center for Mental Fitness and Well Being and the SoundMind Collaboratory. Previously, she was Professor in Education and Cognitive Science at the University of California, Irvine, where she directed the Working Memory and Plasticity Lab for over a decade. She received PhDs in Cognitive Psychology and Neuroscience, as well as a 'Habilitation' from the University of Bern in Switzerland, and she conducted postdoctoral work in Cognitive Neuroscience at the University of Michigan. Susanne Jaeggi's research program focuses on understanding individual differences in working memory, executive functions, and related cognitive domains, as well as their malleability across the lifespan using experimental and neuroscientific approaches. Because of the relevance of those cognitive domains in educational settings and daily life, her major work has focused on the development of assessments and interventions, and the extent to which working memory and executive functions can be improved with both, experience and targeted training. Furthermore, she is particularly interested in understanding the underlying mechanisms of learning and cognitive training, and determining for what individuals and populations cognitive training is most effective and why. Her work has been funded by NIH (NIA, NIMH), NSF, ONR, or the Advanced Education Research and Development Fund (AERDF; EF+Math Program).

Aaron R. Seitz, PhD

Title: Challenges and Opportunities to Digital Assessment and Training

Abstract: In this talk, I will discuss research that the Brain Game Center for Mental Fitness and Well-being has been doing to develop digital tools to better understand and train perceptual and cognitive processes. With the ubiquitous use of smart-phones, tablets and computers unlocks new opportunities to conduct cognitive research in at-home environments, as well as opportunities for tele-health using these systems. However, there are challenges as well to ensuring robust and rigorous results. I will discuss both tools that we are developing in this space, challenges that need to be overcome, and plans to share these tools to promote open science and world-wide research.

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Bio: Aaron Seitz's research program aims to understand mechanisms of cognitive processes and to apply this knowledge for public benefit. His academic training is diverse, with a BA in theoretical mathematics, PhD in computational neuroscience, postdoctoral work in systems neuroscience and neuroimaging. His research has led to new insights regarding the roles of reinforcement, attention, multisensory interactions, and different brain systems in learning, computational approaches to learning, translational neuroscience and perceptual/cognitive enhancement, among others. He utilizes psychophysical, physiological, imaging, pharmacological, genetic, and computational methods to study cognitively diverse populations, ranging from individuals with cognitive deficits (due to disease, injury, or development) to neurotypical individuals, to specialists (e.g., radiologists, athletes). As Director of the Brain Game Center for Mental Fitness and Well-being, he uses ambulatory tools (e.g., that run on mobile phones and tablets) to reach larger, more diverse, and traditionally underserved/understudied populations, to understand cognitive diversity (broadly defined) and to create tools to measure function and to personalize training based upon individualized needs. His work has been funded by NIH, NSF, ONR, or the Advanced Education Research and Development Fund (AERDF; EF+Math Program).