

CNB Newsletter

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Dear CNB members,

With the CNB Newsletter, we intend to inform you about upcoming CNB events, ongoing projects and give insights into the research topics of selected CNB members.

We hope you enjoy reading the November 2019 edition.

Prof. Dr. Tobias Nef
President CNB

① Brainweek 2020 Preview

Monday, 16th of March – Friday, 20th of March 2020

We are pleased to invite you to the Brainweek 2020 on the overall topic of *Gender & Brain*.

This year's program includes an evening symposia on gender & brain and brain diseases, a movie night, a panel discussion and the CNB Science Slam.

At the gender & brain symposium you can hear talks about the questions of whether there are gender differences in intelligence, if there are genetical differences in behavior, if there is a gender bias in research and whether there is gender discrimination in veterinary medicine.

The second symposium will be all about brain diseases, with talks about anxiety disorders, multiple sclerosis, stroke and parkinson's disease.

For Wednesday, the 18th of March, we were able to attract Prof. Dr. Kathrin Altwegg as a speaker. She is an astrophysicist and was part of the space project Rosetta run by the European Space Agency. After her talk we are going to show the movie *Hidden Figures*, which also addresses the topic of women in research.

What happens during a stroke, what are the consequences, which treatment options do exist and how does this all feel for those affected? These questions will be the topic of the panel discussion, which is held with experts as well as patients.

Last but not least, the 4th CNB Science Slam will take place at Kino Alhambra and will show that research can be very entertaining.

Contributions may be rather free – without predefined questions – but should somehow refer to the overall topic of *Gender & Brain*.



For more Information, please go to:

https://www.neuroscience.unibe.ch/brainweek_bern/

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(2) Selected Research Groups

Prof. Dr. Martin grosse Holtforth

*Psychosomatic Medicine
Department for Psychology
University Hospital of Psychiatry*



Dr. med. Niklaus Egloff

*Psychosomatic Medicine
Department for BioMedical Research
University Hospital of Psychiatry*



Our research focuses on improving the treatment of chronic pain. In Switzerland, every sixth person is affected by chronic pain and 25% of all doctor's consultations are due to chronic pain. Factors that influence symptomatology, etiology and maintenance of pain are multifaceted, and chronic pain can be best understood as a multifactorial and iterative process.

Our research focus is on the understanding of biological, psychological and social factors influencing the multimodal pain treatment. We want our research to contribute to an even stronger personalization of pain treatment as well as continuous improvement of the therapy's effectiveness.

As our previous studies have confirmed the clinical experience that chronic pain patients represent a very complex and heterogeneous patient group, it is im-

portant to design the treatment as individually as possible and according to the individual biopsychosocial conditions brought along by the patients.

Sample results of our previous research:

In one of our studies, we described the generally enhanced pain sensitivity in our inpatients and its association to previous stress exposure (Studer et al., 2017).

In another study, we were able to determine three subgroups of pain coping patterns that differed significantly in almost all examined characteristics, but not in terms of pain duration and intensity (Grolimund et al., 2018).

In addition, motivational aspects seem to be potentially beneficial within pain treatment. Psychotherapy motivation at the beginning of treatment appeared to be an important predictor of reduced pain intensity and better emotional well-being after treatment in one of our analyses (Stewart et al., 2017).

Relatedly, an inadequate ability to interpret emotions in a meaningful way (being alexithymic) and seeing little value in psychotherapeutic interventions predicted worse outcome, and both factors together had an even worse effect (Blaettler et al., 2019).

Finally, psychosocial interventions appear to not only reduce pain, anxiety and sleep but to also enhance

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positive affect in treated patients (Gómez Penedo et al., submitted).

All these study findings recently led to a clinical guideline proposal for personalized multimodal pain therapy (Grolimund et al., 2019).

Selected publications:

- Studer M, Stewart JA, Egloff N, Zürcher E, Brodbeck J, grosse Holtforth M. Psychosocial stressors and pain sensitivity in chronic pain disorder with somatic and psychological factors (F45. 41). *Der Schmerz*. 2017;31(1):40-46.
- Grolimund J, Studer M, Stewart JA, Egloff N, grosse Holtforth M. Types of pain coping in chronic pain patients. *Der Schmerz*. 2018;32(1):39-47. (German)
- Stewart JA, Egloff N, von Känel R, Grolimund J, Studer M, grosse Holtforth M. Motivation for Psychological Treatment Predicts Favorable Outcomes in Multimodal Interdisciplinary Treatment for Chronic Somatoform Pain. *Psychotherapy and Psychosomatics*. 2017;86(1):60-61.
- Blaettler LT, Stewart JA, Gubler DA, Egloff N, von Känel R, grosse Holtforth M. Alexithymia moderates effects of psychotherapeutic treatment expectations on depression outcome in interdisciplinary chronic pain treatment. *Journal of psychosomatic research*. 2019;122:69-72.
- Gómez Penedo JM, Rubel JA, Blaettler LT, Schmidt SJ, Stewart JA, Egloff N, grosse Holtforth M. The Complex Interplay of Pain, Depression, and Anxiety Symptoms in Patients with Chronic Pain: A Network Approach. (submitted).

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Dr. Barbara Studer

*Heart Brain
Department of Educational Psychology
Center for Cognition, Learning, and Memory*



Plasticity is a wonderful and fascinating characteristic of the human brain. It empowers us to influence and train specific skills and abilities by making processes more efficient as a result of repeated experience. For instance, computerized cognitive training has shown some promise in improving intellectual abilities. Moreover, behavioral interventions, such as practicing small acts of self-control over a period of time, were shown to result in increased self-regulation strength. Even wellbeing can be increased by specific interventions, such as mindfulness training. Our brain-heart research group investigates possibilities and limitations of such interventions in applied settings.

We pursue the “brain stream” by focusing on cognitive training. This refers to the regular and focused exercise of mental activities in order to increase performance in the trained and, more critically, in non-trained cognitive tasks (transfer). Indeed, cognitive training research elicited promising findings of transfer effects during the last decade; this has stirred widespread interest among researchers and public at large, but has also led to many critical reviews. Many critics have focused on ignorance of individual intermitting factors as well as of understanding the training mechanisms. Therefore, our research focus is on the understanding of individual factors which influence training outcomes as well as on the understanding of effective training task features in samples of children, young adults as well as the elderly. Our main training paradigm consists of working memory (WM) tasks, such as dual n-back and complex span tasks. Regarding individual dif-

ferences influencing training success, our research with school children as well as young adults revealed the relevance of some personality traits, such as neuroticism and conscientiousness, and emotional self-regulation. That is, cognitive training outcomes always depend on the characteristics and abilities of the individual, to whom the training is administered. Regarding training task features, we investigate differential effects of diverse training approaches. In a training study in schools we found some evidence for discriminative transfer effects following complex and single WM training, depending on specific processes tapped by the training tasks. In a sample of adults at different ages we found that a dichotic listening training, a task with high load on divided attention, reveals similar results to that of a dual n-back task training. However, the training effects in both groups were not significantly higher than in the control groups. We found similar results in a sample of seniors, where training performance increased but failed to transfer to other cognitive measures.

We pursue the “heart stream” by focusing on the influence of anxiety on cognitive performance, as well as on the modulation of self-regulation and life satisfaction. In a study conducted with secondary school students, we examined the effects of four behavioral daily interventions (improving posture, refraining from a self-chosen verbalism, gather knowledge about self-regulation, writing down three good things) on cognitive, behavioral and self-report measures of self-regulation and life satisfaction. While the groups with the self-regulation topic changed their self-regulation

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scores, the “3 good things” group reported enhanced life satisfaction instead.

Our multidisciplinary team is composed of psychologists from neuro- as well as health psychology, joining their efforts to shed light on the effects of cognitive and behavioral interventions in applied settings to enhance cognitive and emotional abilities.

Selected articles (in preparation):

- Hogrefe, A., Studer-Luethi, B., Kodzhabashev, S., & Perrig, W. J. (2018). Mechanisms underlying n-back training: Response consistency during training influences training outcome. *Journal of Cognitive Enhancement*, 1(4), 353-357.
- Studer-Luethi, B. & Meier, B. Is cognitive training is effective? A comparison between dual n-back and dichotic listening training.
- Studer-Luethi, B., Toermaenen, M., Margelisch, K., Hogrefe, A. B., & Perrig, W. J. Working Memory Training: The Role of Training Tasks and Trainee Characteristics.
- Studer, B., Mombelli, D., & Job, V. Self-regulation training in high school: transfer effects of different interventions on cognition, behavior and self-reports.

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③ Upcoming events

16. – 20. March 2020	Brainweek Bern 2020 <i>Gender & Brain</i>
23. October 2020	CNB Annual Meeting 2020

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