Department of Psychiatry and Psychotherapy
Division of Child and Adolescent Mental Health

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Research focus
- Prenatal and early risk factors for child development: FRANCES – Franconian Cognition and Emotion Studies
- Neural processing of emotional and disorder specific stimuli in girls with eating disorders
- Parenting stress in the context of mental health treatments for children and adolescents
- Therapeutic interventions - Clinical effects and underlying mechanisms
- Prenatal trauma and fetal programming in a mouse model

Structure of the Division
Professorship: 1
Personnel: 156
- Doctors (of Medicine): 27
- Scientists: 4 (thereof funded externally: 0)
- Graduate students: 14

Clinical focus areas
- Attention deficit/hyperactivity disorder (ADHD)
- Tic and obsessive-compulsive disorders
- Anxiety and depressive disorders
- Posttraumatic stress disorders
- Eating disorders
- Autism spectrum disorders
- Reduced intelligence with psychiatric comorbidity
- Regulation, feeding, and behavior disorders in early childhood

Research
The aims of the scientific projects of the Division of Child and Adolescent Mental Health are to contribute to a better understanding of the developmental processes and the neurobiological basis of emotional and behavioral disorders in children and adolescents and to learn more about the neuronal mechanisms of therapeutic interventions.

Neural processing of emotional and disorder specific stimuli in girls with eating disorders
PI: Dr. S. Horndasch
In girls and women with eating disorders (anorexia nervosa, bulimia nervosa) versus typically developing girls and an adult control group, gaze behavior and central nervous and peripheral physiological responses were studied when viewing body scheme pictures of underweight, normal weight, and overweight women. Patients with eating disorders showed a visual attentional bias (measured via eye-tracking) towards body shape-related information and enhanced motivated attention (measured via EEG event-related potentials) following pictures of strongly underweight women. fMRI data reflect differential neural processing of food and body stimuli in patients with anorexia nervosa versus control participants and in adolescents versus adults. Our current study is looking at neural reaction patterns of anticipation (when looking at food pictures) and actual consumption (when eating high and low calory food) via resting state fMRI.

Parenting stress in the context of mental health treatments for children and adolescents
PI: Dr. V. Irlbauer-Müller
Psychiatric disorders in children and adolescents are associated with a higher level of parenting stress. The affective-cognitive characteristic of parents has a negative impact on the observable parenting behavior, increasing the probability of dysfunctional parent-child-interaction and influences the child-/adolescent-reported internalized representation of the parent-child-relationship. Additional negative consequences for the child’s/adolescent’s psychological health and the parent-child-interaction are possible. Therefore psychiatri/psychotherapeutic support for children and adolescents has to include evidence-based interventions for both, the individual and for the family, especially for the parents. The current study compares different parent-specific interventions focusing the effects on the self-reported parenting stress and the child-/adolescent-reported internalized representation of the parent-child-relationship.

Therapeutic interventions – Clinical effects and underlying mechanisms
PI: Dr. P. Studer
Neurofeedback involves a brain-computer interface which enables to learn self-control over specific aspects of neural (EEG) activity. While our earlier multi-center studies were essential in
demonstrating the clinical effectiveness of neurofeedback (theta/beta and slow cortical potential training) for children with ADHD, our recent meta-analysis indicated in addition that neurofeedback effects (compared to non-active control treatments) lasted longer after the end of treatment. Our recent studies („short-term studies“ with less training session) aim at how to optimize neurofeedback training and learn more about the mechanisms underlying a successful training („neuroplasticity“). Special light concepts are used to stabilize circadian rhythms in patients with psychiatric disorders. In our recently established light laboratory, we observed positive effects of blue versus red light on attention in ‘healthy’ adolescents (increased performance, reduced reaction time variability) and obtained first hints for improved sleep according to actigraphy measures after red versus blue light. Further studies are planned to evaluate the effectiveness of light therapy in adolescents with psychiatric disorders.

Funding: ELAN-Fonds

Prenatal trauma and fetal programming in a mouse model
Pt: Dr. S. Frey
We applied our mouse model of prenatal trauma to investigate molecular and epigenetic consequences for fetal brain development. Timing and their underlying mechanisms are of special interest. Prenatal trauma may cause decreased weight, increased HPA-axis activity, and behavioral symptoms of fear in the affected pups. Expression and methylation of Crhr1 changed postnatally in the dorsal hippocampus and prenatally in the hypothalamus. Our findings support the hypothesis that trauma-induced neuroendocrine and behavioral alterations are associated with stable changes of methylation and expression of stress-related genes from in utero time point on.

Teaching
The Division of Child and Adolescent Mental Health is involved in compulsory and elective courses in the curriculum of the degree program Medicine. MD theses as well as Bachelor’s and Master’s theses (mainly in psychology) are supervised.

Selected publications


International cooperations
Prof. L. Gabel, Lafayette College, Easton, Pennsylvania: USA
Dr. M. Arns, Brainclinics, Nijmegen: The Netherlands