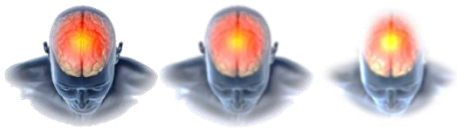


RUHR UNIVERSITÄT BOCHUM RUB Universitätsklinikum Essen Philipps Universität Marburg

Extinction Learning Symposium

25th- 26th of November 2013

Beckmanns Hof, Ruhr-University Bochum

Hosted by the Young Scientists
of the DFG-Research Unit 1581
"Extinction Learning"

Special thanks to our guest speakers

Tom Beckers
KU Leuven (Belgium) and University of Amsterdam (The Netherlands)

Stephen Maren
Department of Psychology and Institute for Neuroscience, Texas A&M University (USA)

Mohammed Milad
Department of Psychiatry, Harvard Medical School, Massachusetts General Hospital, Boston, MA (USA)

Andreas Olsson
Emotion Lab, Department of Clinical Neuroscience, Karolinska Institute (Sweden)

Juan M. Rosas
Department of Psychology, University of Jaén (Spain)

Travis P. Todd
Dartmouth College, Hanover, New Hampshire (USA)

Gonzalo Urcelay
Department of Psychology – University of Cambridge (UK)

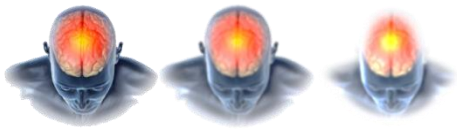
Our research group

noch in Vorbereitung….

Überblick über unsere Forschergruppe

Kaffepause, Mittagessen

Zertifikat

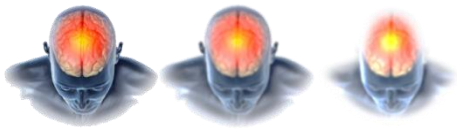


Extinction Learning Symposium Bochum 2013

Schedule for today

10.15	**Juan M. Rosas** Pavlov's dog is on Freud's couch
11.30	*Coffee break*
11.45	**Tom Beckers** Cognitive processes in fear extinction and fear reduction
13.00	*Lunch*
14.15	**Gonzalo Urcelay** Boundaries and conditions for reconsolidation and extinction
15.30	Poster session (incl. *coffee break*)
17.00	**Stephen Maren** Brain circuits for contextual control of fear
18.15	*shuttle service back to the hotel*
19.30	*Dinner at Haus Rietkötter*

Extinction Learning Symposium Bochum 2013



P1: Combining Cells and Behavior

Dept. of Biopsychology, Ruhr-Universität Bochum

Onur Güntürkün, Maik Stüttgen
Daniel Lengersdorf, Sarah Starosta

P1: Combining cells and behavior

Biopsychology Bochum

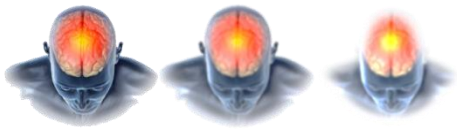
Onur Güntürkün

Maik C. Stüttgen

Daniel Lengersdorf

Sarah Starosta

Columba livia



INSTITUT FÜR
KOGNITIVE
NEUROWISSENSCHAFT

RUB

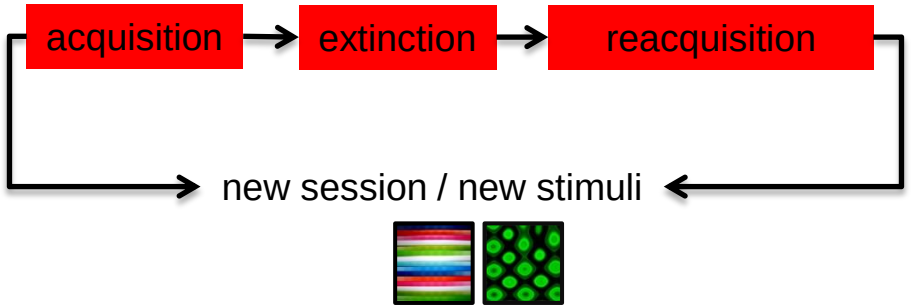
P1: Combining cells and behavior

- neuronal substrate of extinction learning and renewal
  - two approaches
    - single unit recordings
    - pharmacological manipulations

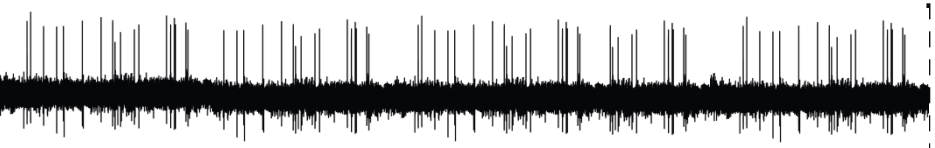
Method

appetitive , operant conditioning

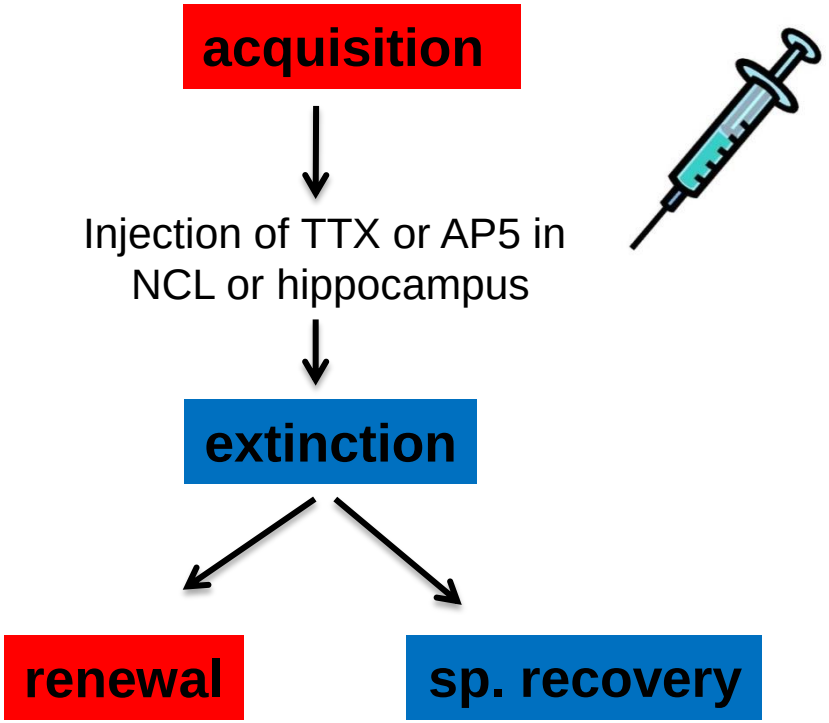
- Sarahs approach

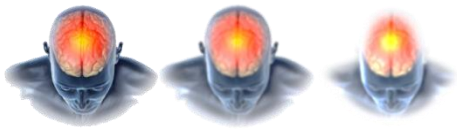


- single-unit recordings
- in avian forbrain (Nidopallium Caudolaterale, NCL)
- during three stages of learning
- within one experimental session



- Daniels approach





P2: RUB

P3: Extinction and Renewal in Behaviorally Conditioned Immunosuppression

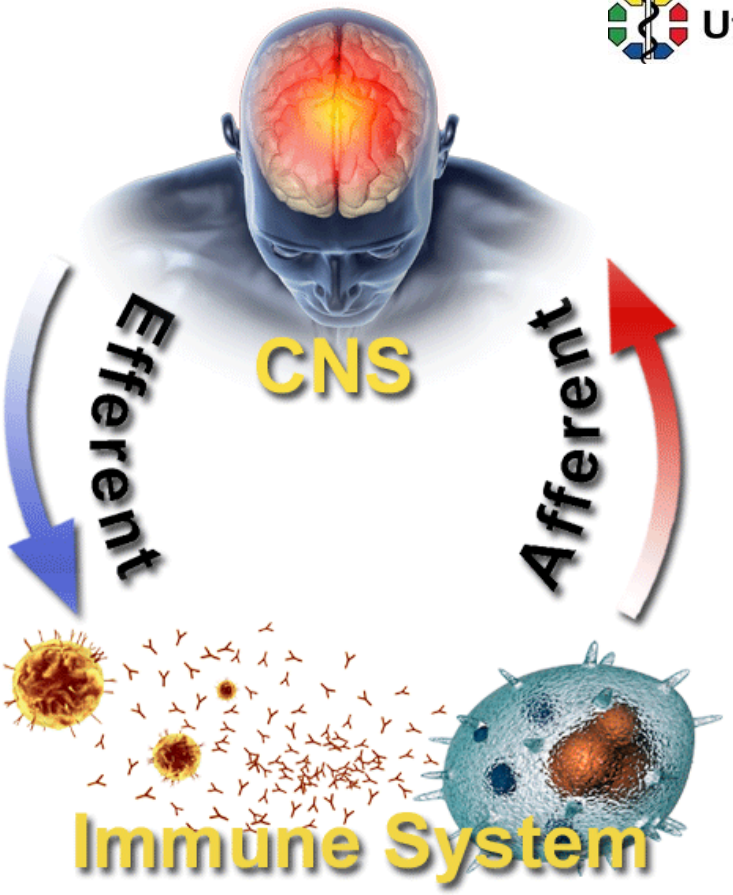
Inst. of Medical Psychology and Behavioral Immunobiology, University Clinic Essen

Manfred Schedlowski, Harald Engler
Katharina Bösche, Kathrin Orlowski

P3: Extinction and Renewal in Behaviorally Conditioned Immunosuppression

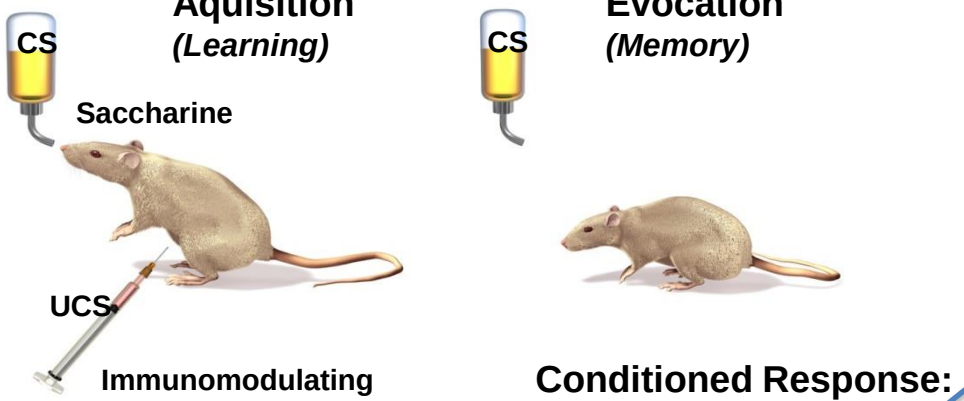
Young Scientists: Katharina Bösche, Kathrin Orlowski

Universitätsklinikum Essen



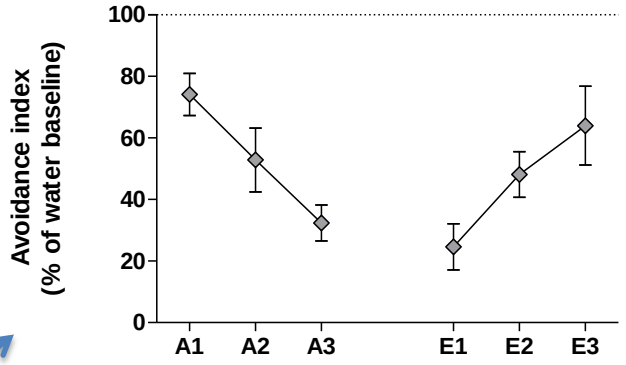
P3: Extinction and Renewal in Behaviorally Conditioned Immunosuppression

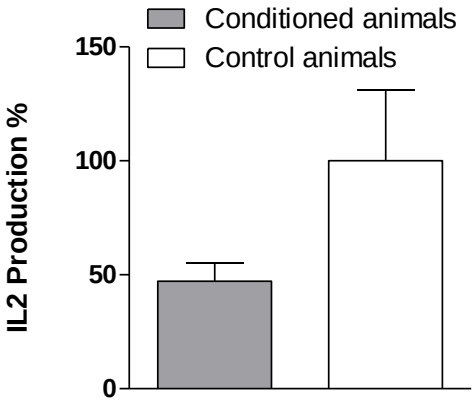
Conditioned taste aversion paradigm

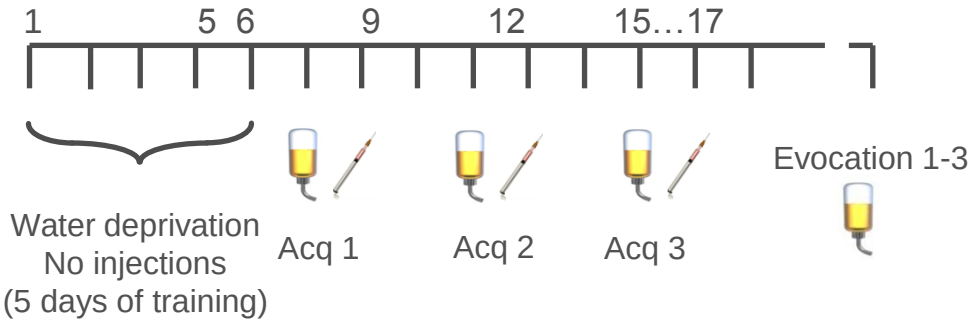


Conditioned Response:

- Taste Aversion
- Immunological Changes







Clinical relevance of Behavioral Conditioned Immunosuppression

Organ transplantation can be a start in a new life for the recipient, but is accompanied by several complications

- Graft rejection, side effects of medication, costs etc.

Behaviorally conditioned immunosuppression can have the opportunity to:

- Reduce the dose of medication required
- Limit unwanted drug side effects
- Maximize therapeutic effects
- Save costs

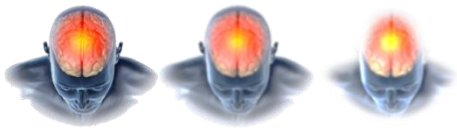
P3: Extinction and Renewal in Behaviorally Conditioned Immunosuppression

Effect of drug pre-exposure on learned immunosuppression in rats

Katharina Bösche

The extinction of conditioned taste aversion is modulated by intra-insular infusions of anisomycin or propranolol

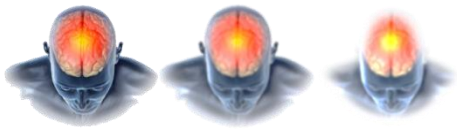
Kathrin Orlowski



P4: The Role of Attention in Renewal

Associative Learning Unit, Philipps-Universität Marburg

Harald Lachnit, Metin Üngör
Sara Lucke



Philipps Universität Marburg

P4: The Role of Attention in Renewal

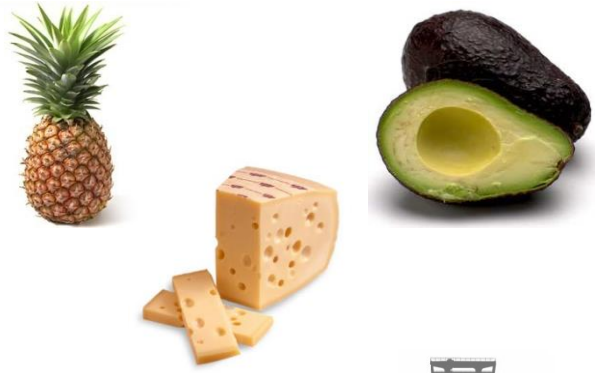
Harald Lachnit, *Sara Lucke*, Metin Üngör

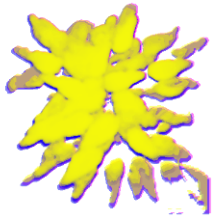
- Influence on the amount of attention to contextual stimuli
- Manipulated during either acquisition or extinction
- Different manipulations…
  - →… the **informational value** of contexts
  - →…the degree of **expectancy violation** experienced within a context

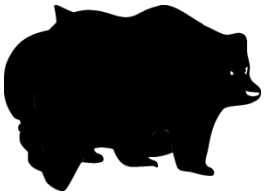
Method

Predictive Learning Task

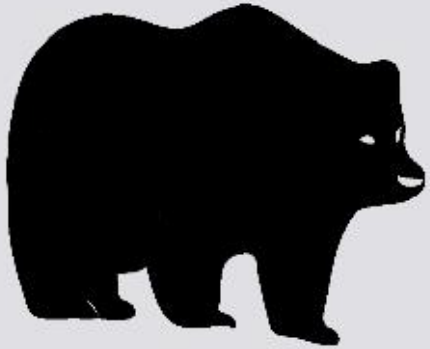
- Medical Doctor Scenario
- Different Restaurants as Contexts
- Different Foods as Cues
- Prediction of stomach trouble







Der Patient hat im Restaurant



folgendes Lebensmittel zu sich genommen:

Erwartest Du, dass der Patient Magenbeschwerden bekommt?

Ja, ich erwarte Magenbeschwerden

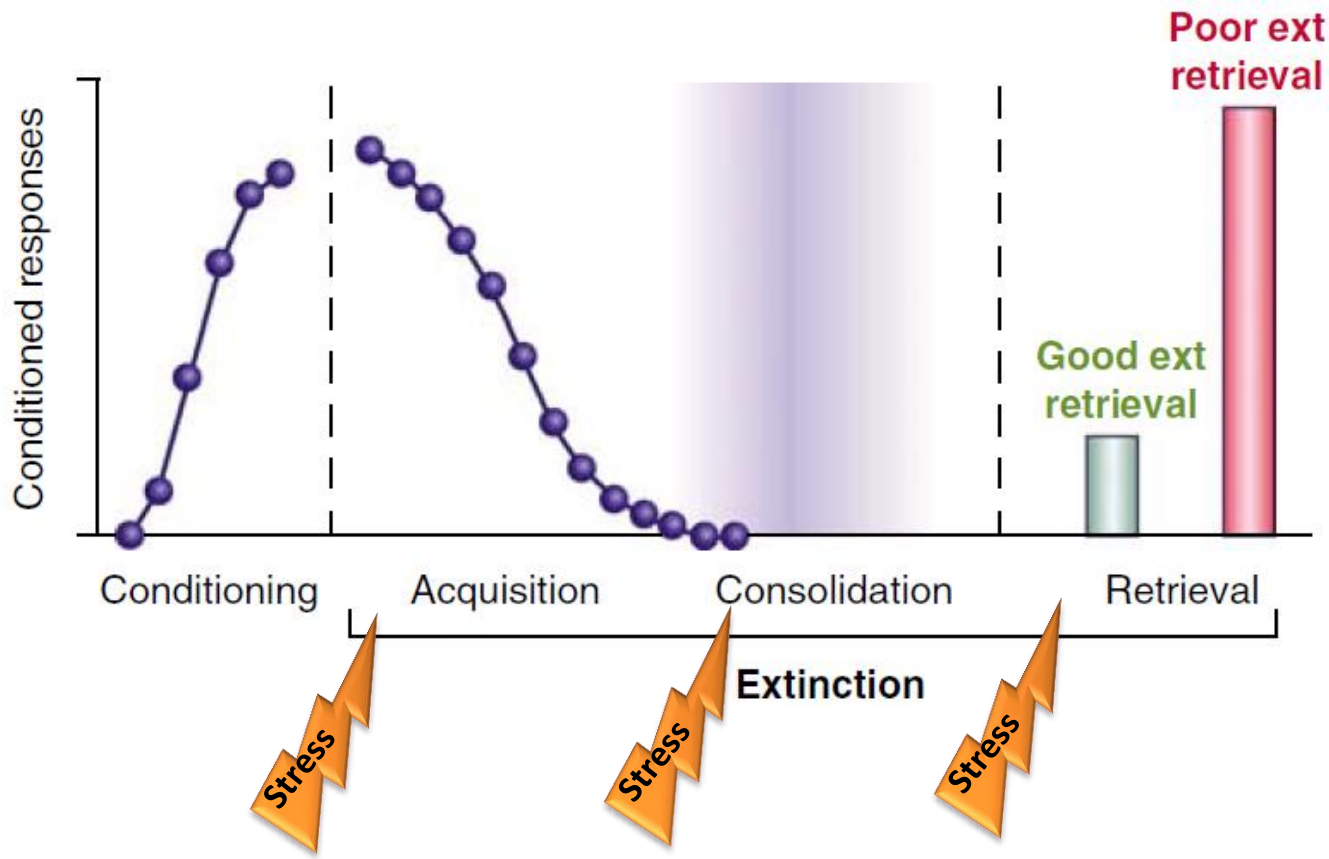
Nein, ich erwarte keine Magenbeschwerden

P5: Effects of stress on extinction, reconsolidation and renewal in humans

Dept. of Cognitive Psychology, Ruhr-Universität Bochum

Oliver Wolf, Christian Merz
Tanja Hamacher-Dang, Valerie Kinner, Shira Meir Drexler

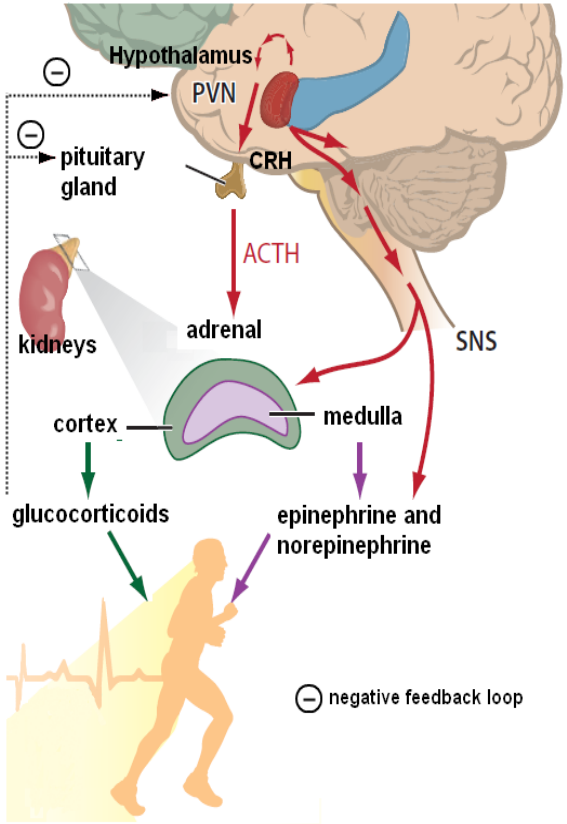
P5: Effects of stress on extinction, reconsolidation and renewal in humans



Quirk & Mueller, 2008

Stress induction

- **Socially evaluated cold pressor test** (SECPT; Schwabe et al., 2008)
  - hand immersion into ice-cold water (0-2 °C) for 3 minutes
  - video recording of the participant's face
  - monitoring by a reserved experimenter
- Control procedure: hand immersion into warm water (36 – 37 °C)

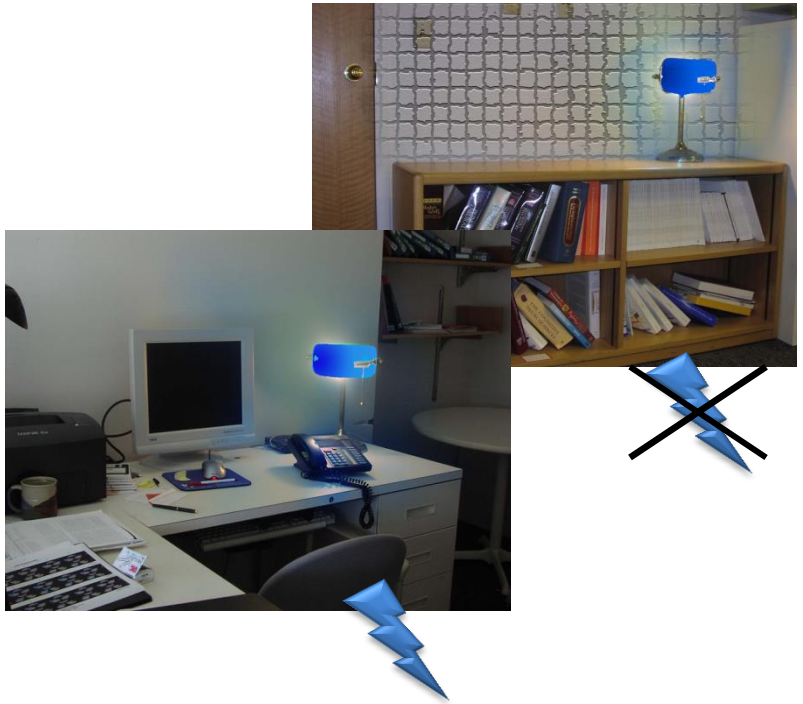


Experimental paradigms

» Predictive learning task

» Fear conditioning

Do you expect stomach trouble?



UCS: shock

Results?

» Please visit our posters!

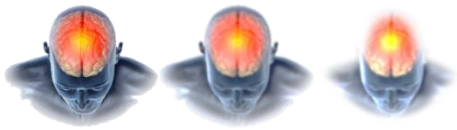
Prof. Dr. Oliver T. Wolf

Dr. Christian Merz

Tanja Hamacher-Dang, M.Sc.

Shira Meir Drexler, M.Sc.

Valerie Kinner, M.Sc.



P7: Neural mechanisms of learning and extinction in human visceral pain

Inst. of Medical Psychology and Behavioural Immunology, University Clinic Essen

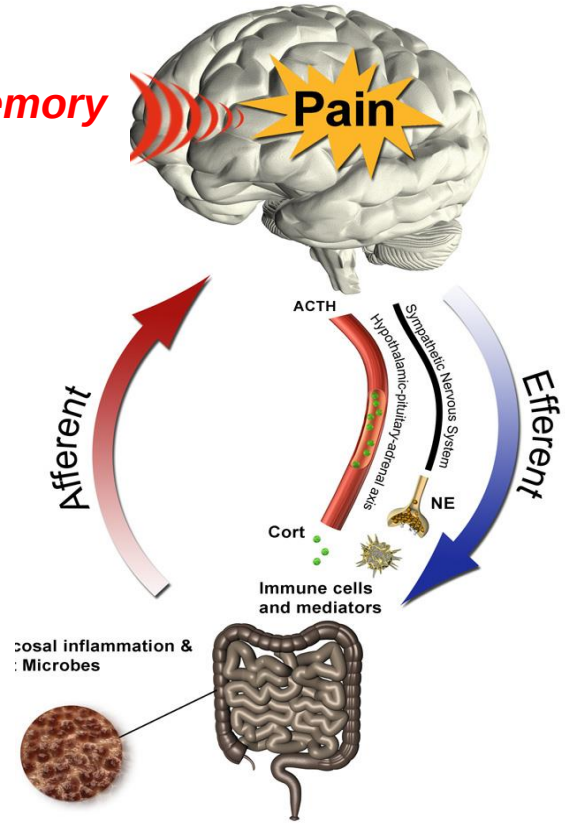
Sigrid Elsenbruch, Sven Benson

Adriane Icenhour, Joswin Kattoor, Franziska Labrenz

P7

Neural mechanisms of learning and extinction in human visceral pain

Learning & Memory



Sigrid Elsenbruch

Sven Benson

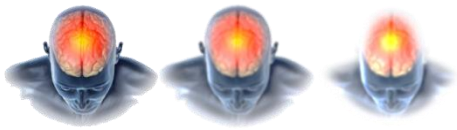
Franziska Labrenz

Joswin Kattoor

Adriane Icenhour

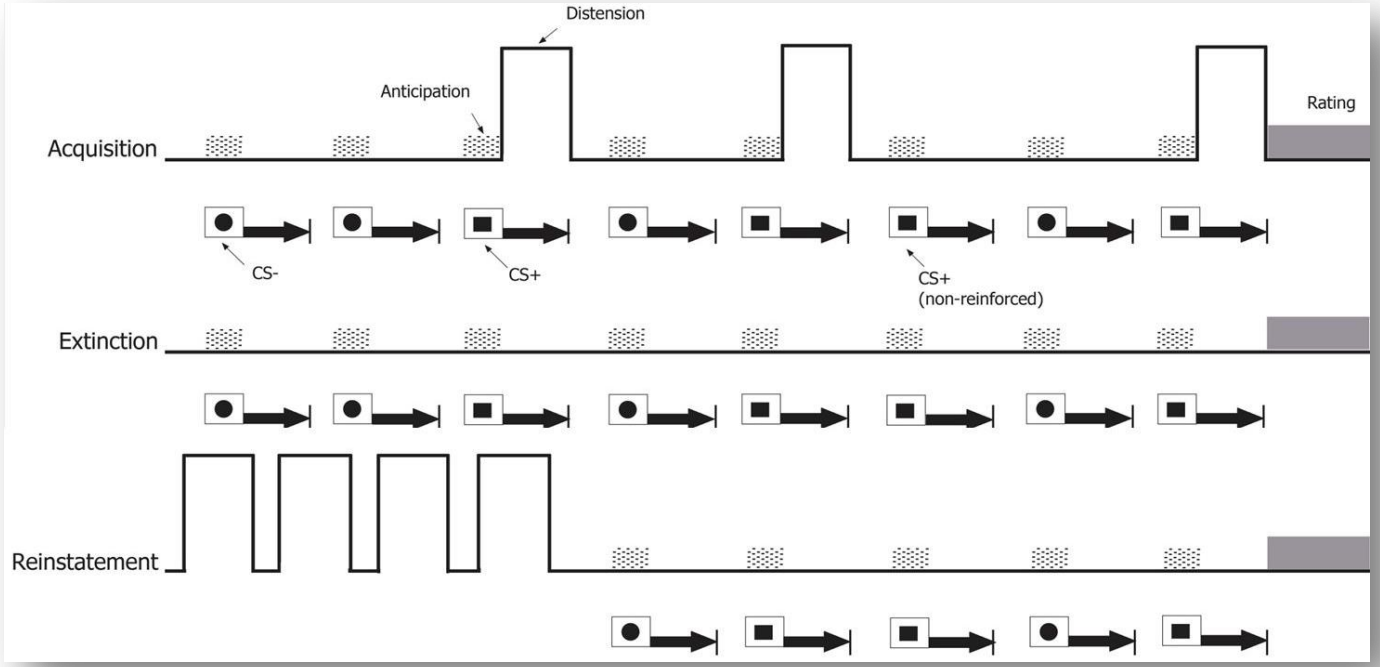
Institute of Medical Psychology and Behavioral Immunobiology

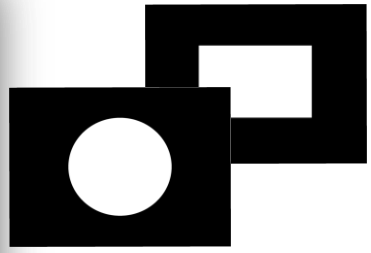
University Hospital Essen, University of Duisburg-Essen



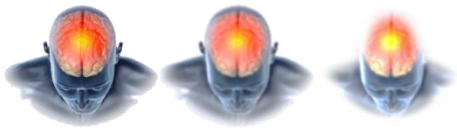
P7 Neural mechanisms of learning and extinction in human visceral pain

- Fear conditioning paradigm with rectal distensions as clinically relevant US
- Learning, extinction and reinstatement in visceral aversive conditioning



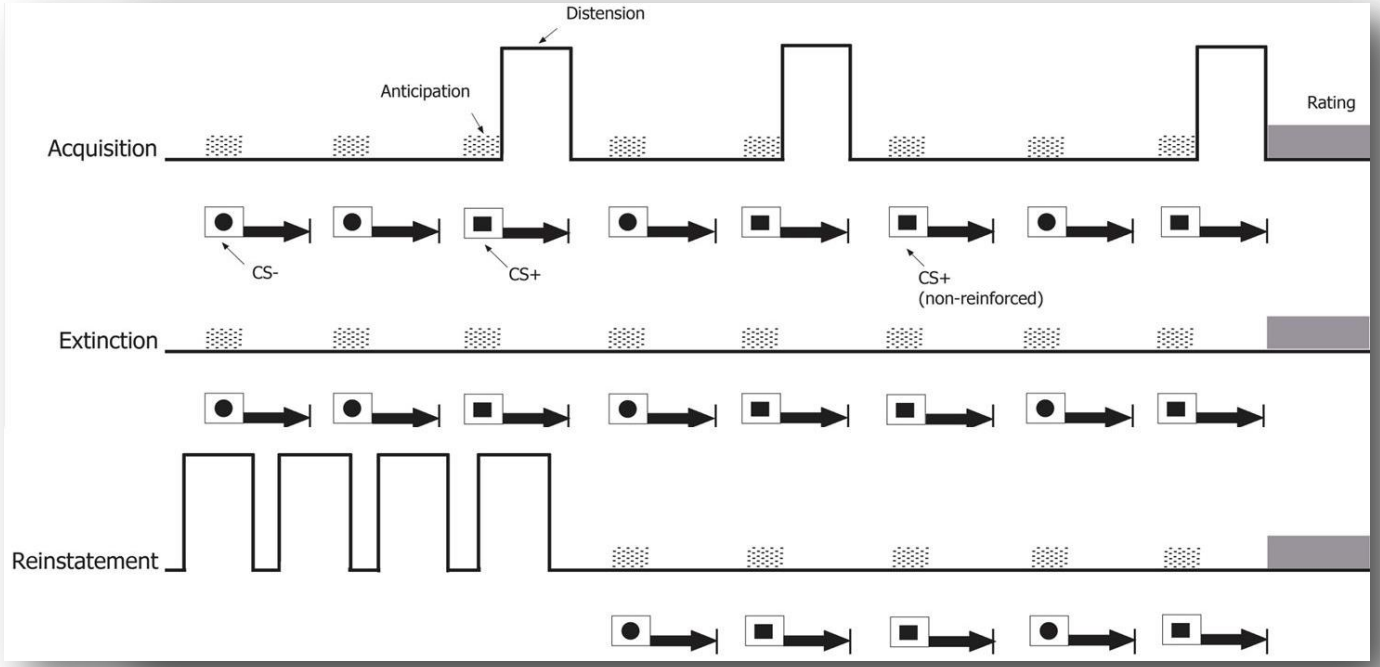


Kattoor et al. 2013 *Plos One*; Kattoor et al., 2013 *Cerebellum*; Benson et al. *in revision;*



P7 Neural mechanisms of learning and extinction in human visceral pain

- Context effects on extinction and renewal
- Learning, extinction and reinstatement in IBS patients



Icenhour et al. *in prep*

Looking forward to seeing you at the poster session!

Effects of CS-US learning trials on fear acquisition and extinction: A pilot study

Context-dependent effects on extinction and renewal of classically-conditioned fear memories in a visceral pain model

P8: Contribution of the human cerebellum to extinction learning and renewal

Dept. of Neurology, University Clinic Essen

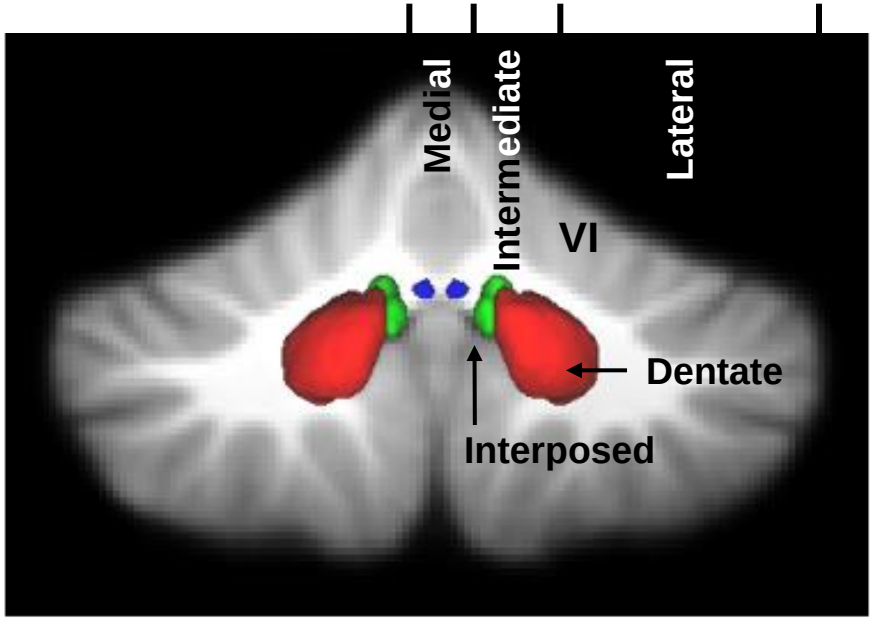
Dagmar Timmann, Mark Ladd
Markus Thürling, Andreas Thieme

Universitätsklinikum Essen

P8 Contribution of the human cerebellum to extinction learning and renewal

PIs: Dagmar Timmann, Mark Ladd
Young Scientist: Markus Thürling

Brief overview of cerebellar subdivisions and their possible contribution to extinction:



Intermediate cerebellum
(interposed nucleus):
Extinction

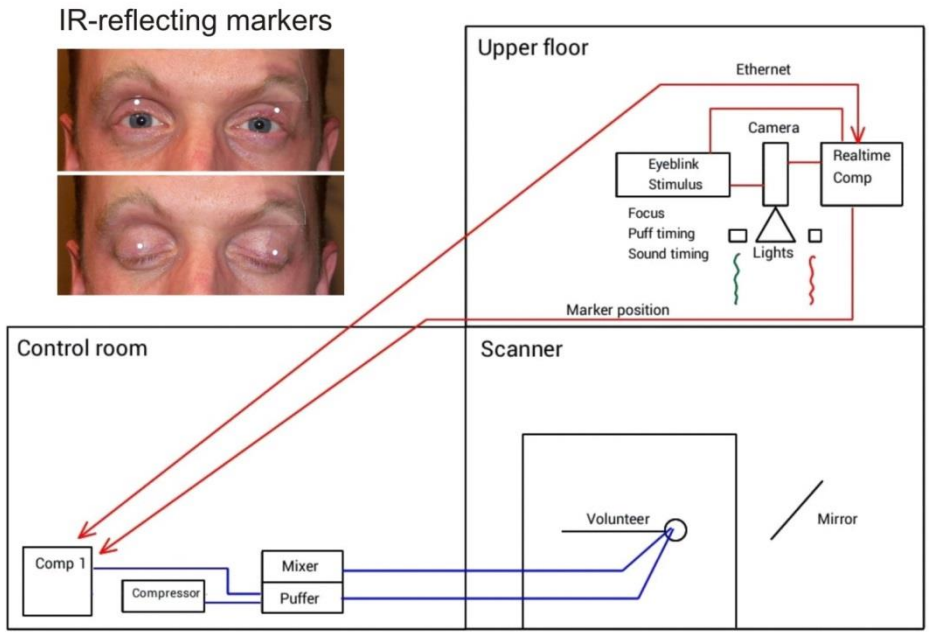
Lateral cerebellum
(dentate nucleus):
Context-related processes in extinction

Study aims

1. **Provide unequivocal evidence that the cerebellum contributes to extinction**
2. **Show that acquisition and extinction related cerebellar areas overlap**
3. **Test the hypothesis that part of the memory is retained in the cerebellar nuclei, but not the cerebellar cortex**

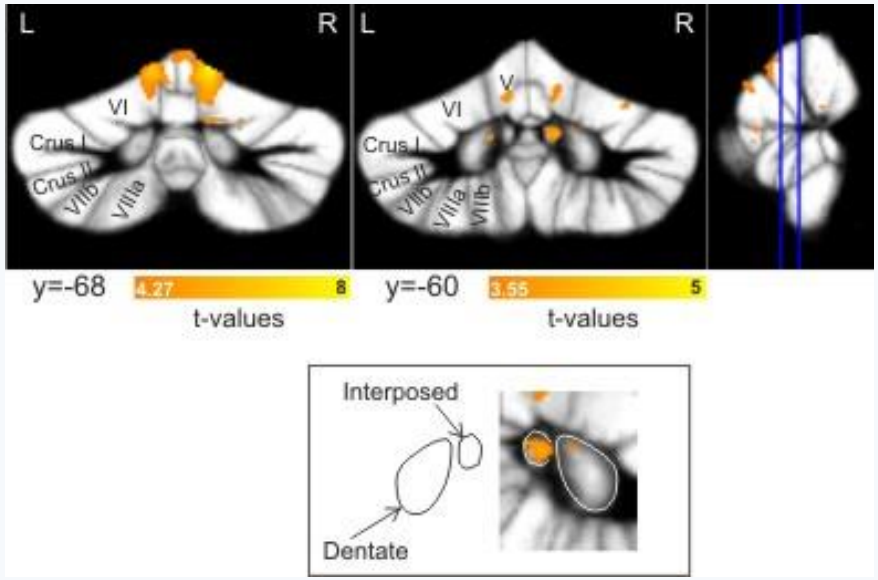
Methods

- Classical eyeblink conditioning in the 7T scanner
- ROI-based normalization including the interposed nuclei
- new template of dentate and interposed
- to use cardio-respiratory data as covariate

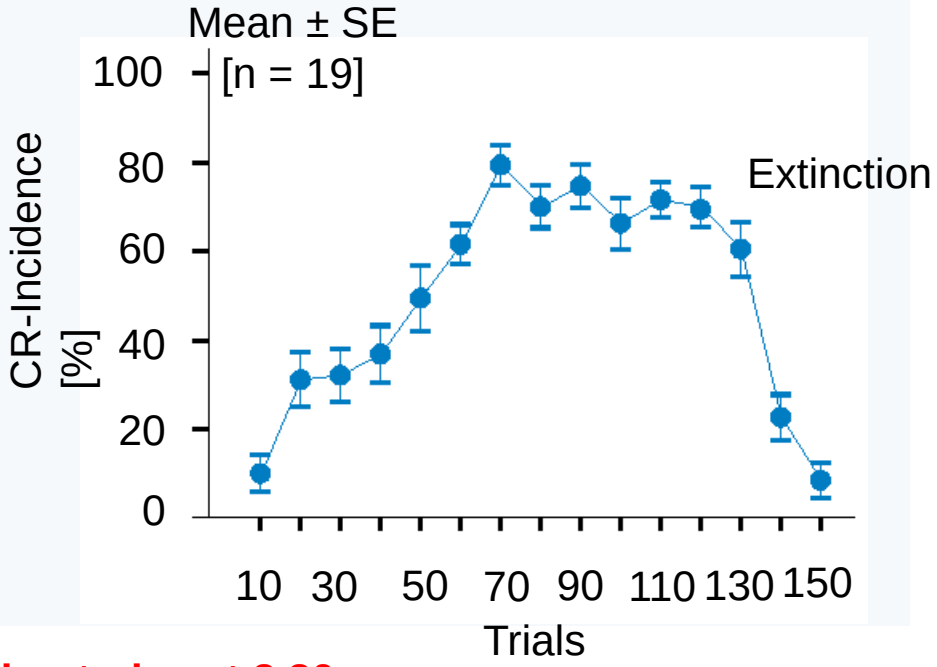


Preliminary results

7T fMRI: Activation related to the unconditioned eyeblink response



Acquisition and extinction of conditioned eyeblinks in the 7T scanner



Please join our poster session today at 3.30 pm:

Markus Thürling: Contribution of the cerebellum to acquisition and extinction of conditioned eyeblinks: A 7T fMRI study

P9: Exposure therapy outcome in specific phobia: the significance of extinction learning and stress system activity

Dept. of Clinical Psychology & Psychotherapy, Ruhr-Universität Bochum

Armin Zlomuzica, Jürgen Margraf, Silvia Schneider

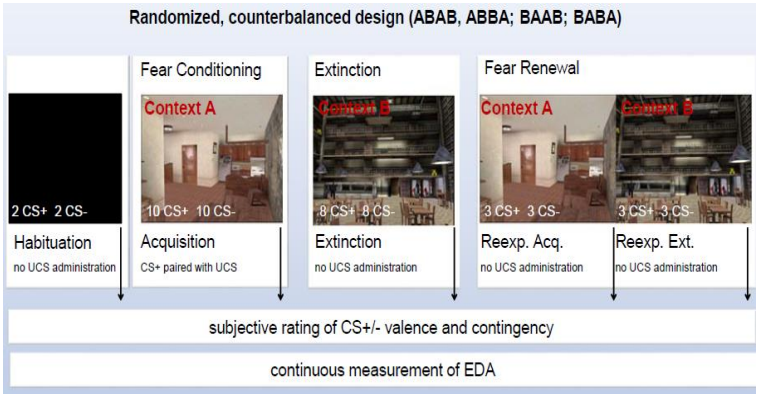
Carina Mosig

Clinical implications of extinction and renewal

Methods:

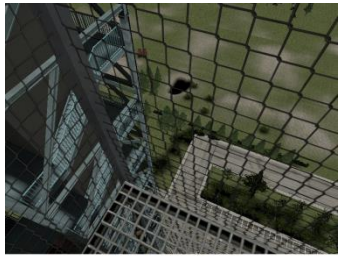
1. Experimental paradigm:

Context dependent differential fear conditioning



2. Exposure therapy:

Virtual reality (VR) based exposure treatment



- Measurement of fear on the subjective, psychophysiological (SCR, HR) and behavioral level
- Behavioral approach test in real environment

Investigation topics

- Extinction learning as a predictor of exposure therapy outcome
- Generalizability of VR treatment effects to real world situations
- effectiveness of procedures to increase extinction learning (and/or prevent fear renewal)
- The role of the stress system activity during exposure treatment benefit

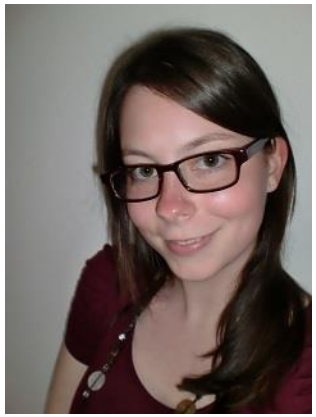
P9: Exposure therapy outcome in specific phobia: the significance of extinction learning and stress system activity

Results of the differential fear conditioning paradigm are presented on our **poster**!

Prof. Dr. Jürgen Margraf

Prof. Dr. Silvia Schneider

Dr. Armin Zlomuzica



Carina Mosig, M. Sc.