



TüCMH

Tübingen Center
for Mental Health

23.01.2024

Enhanced Psychotherapy

Wie kann man die Wirkung von
Psychotherapie verstärken?

Andreas Fallgatter, Tübingen
Vortrag am 23.01.2024

Tübingen Center for Mental Health Campus

Gute Behandlungsmöglichkeiten für psychische Erkrankungen!

Erkrankung	Therapie	Effektstärke	NNT
Schwere Depression	Antidepressiva	hoch	4-8
Psychose	Antipsychotika	hoch	2-7
ADHS	Methylphenidat	hoch	2-6
Bipolare Störung	Lithium	hoch	3-6
Alkoholabhängigkeit	Acamprosate	hoch	7-9
Schwere Depression	EKT	hoch	2-4
Depression	Verhaltenstherapie	hoch	3-7
Angststörung	Verhaltenstherapie	hoch	2-5
Depression, Halluzinationen	TMS	hoch	2-6
Alzheimer-Erkrankung	ACE-Inhibitoren	niedrig	12-42

Brunoni et al., 2017; Cochrane Data Base, 2005; Castells et al., 2011; Cipriani et al., 2018; Cuijpers et al., 2011, 2023; Hansen et al., 2007; Lanctôt et al., 2003; Lefaucheur et al., 2018, 2021; Leucht et al., 2012; Thase et al., 2011; Srisurapanont & Jarusuraisin, 2005; van Beusekom et al., 2007; Yildiz et al., 2011

TABLE 4.1 Effect Size Indices for Various Psychological and Medical Treatments

Treatment	Effect size SMD	Point biserial correlation r (r^2)	NNT	Probability of superiority	Odds ratio
Psychotherapy overall ¹ (Wampold & Imel, 2015)	.75–.85	.35–.39 (.12) – (.15)	3.4–3.9	70.21–72.61%	3.9–4.7
Psychotherapy for depression ² (Cuijpers et al., 2021)	.65	.31 (.10)	4.5	67.77%	3.3
Corticosteroid treatment of chronic asthma ³ (Leucht et al., 2015)	.56	.27 (.07)	5.4	65.39%	2.8
Aspirin for prevention of vascular disease ³ (Leucht et al., 2015)	.12	.06 (.004)	29.2	53.38%	1.2
Etanercept treatment of rheumatoid arthritis ³ (Kristensen et al., 2007)	.64	.31 (.09)	4.6	67.46%	3.2
Copaxone treatment of relapsing-remitting multiple sclerosis ³ (Freedman et al., 2008)	.16	.08 (.006)	21.6	54.50%	1.3
Oesophageal cancer: Chemoradiotherapy plus surgery vs. only surgery (Fiorica et al., 2004)	.35	.17 (.03)	9.2	59.77%	1.9

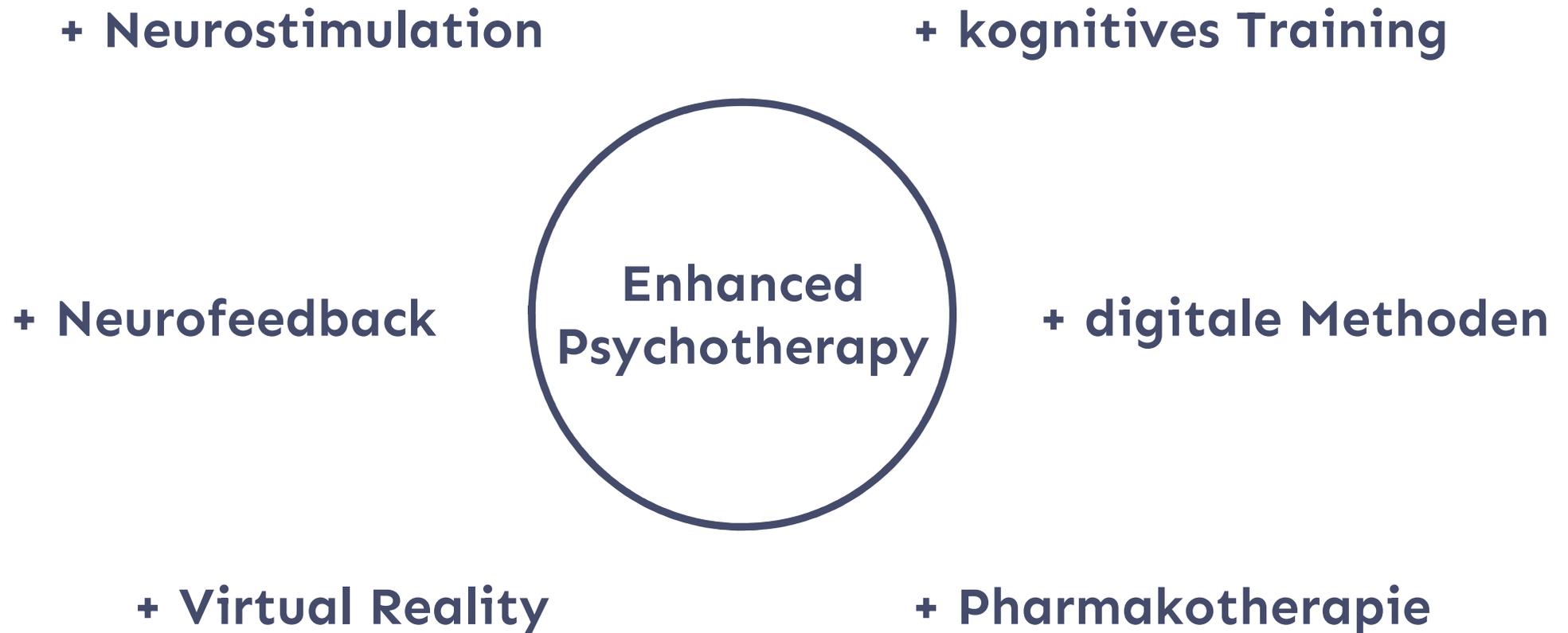
¹ Waitlist controls, treatment-as-usual or placebo used in the control group (see Chapter 5 for a debate on effect sizes in different control groups)

² Average SMD of psychological therapies with significant effects compared to pill placebo control (Cuijpers et al., 2021)

³ Placebo controls

SMD = Standardized mean difference; r = point biserial correlation, r^2 = explained variance (Rosenthal et al., 1994);

Viele Möglichkeiten, Psychotherapie zu verstärken!



Definition des Flagship-Projektes „Enhanced Psychotherapy“ im Deutschen Zentrum für Psychische Gesundheit (DZPG)

- The Enhanced Psychotherapy project aims to improve effectiveness on the basis of addressing underlying processes through innovative components. These include neuromodulation, cognitive training, tailored sleep interventions, digital technologies (such as serious games and virtual reality), and pharmacological interventions aimed at components such as social interactions or neuroplasticity. These will be combined into novel formats for individualized treatment – i.e., precision psychotherapy. This relies on a sound mechanistic understanding and, in a theory-driven manner, aims at processes that should have lasting effects.

Meyer-Lindenberg, Falkai, Fallgatter et al., Nature Mental Health (2023)

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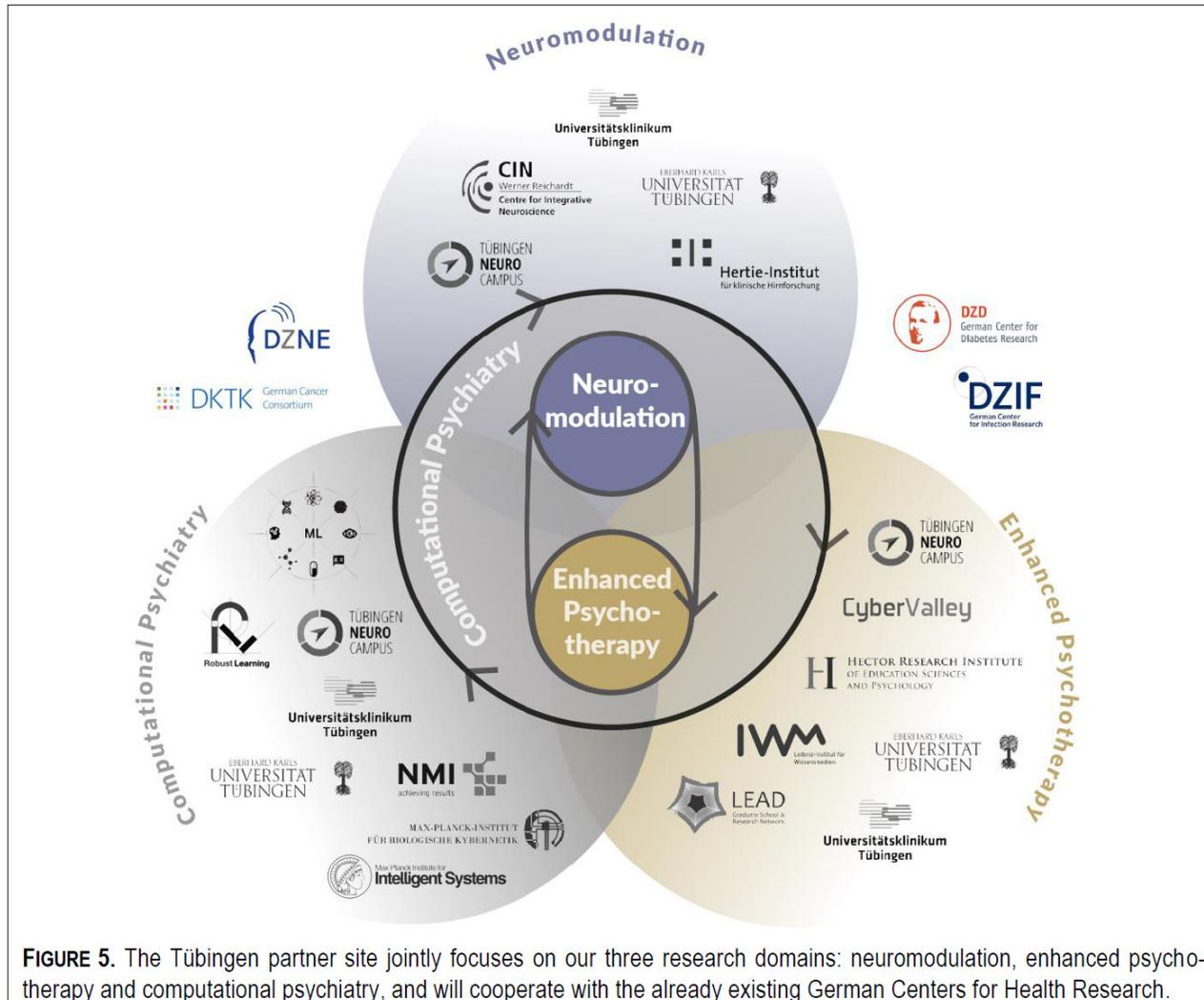
Meyer-Lindenberg, Falkai, Fallgatter et al., Nature Mental Health (2023)

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Meyer-Lindenberg, Falkai, Fallgatter et al., Nature Mental Health (2023)

Konzept des Standortes Tübingen im Deutschen Zentrum für Psychische Gesundheit (DZPG)



Externe Partner für „Enhanced Psychotherapy“:

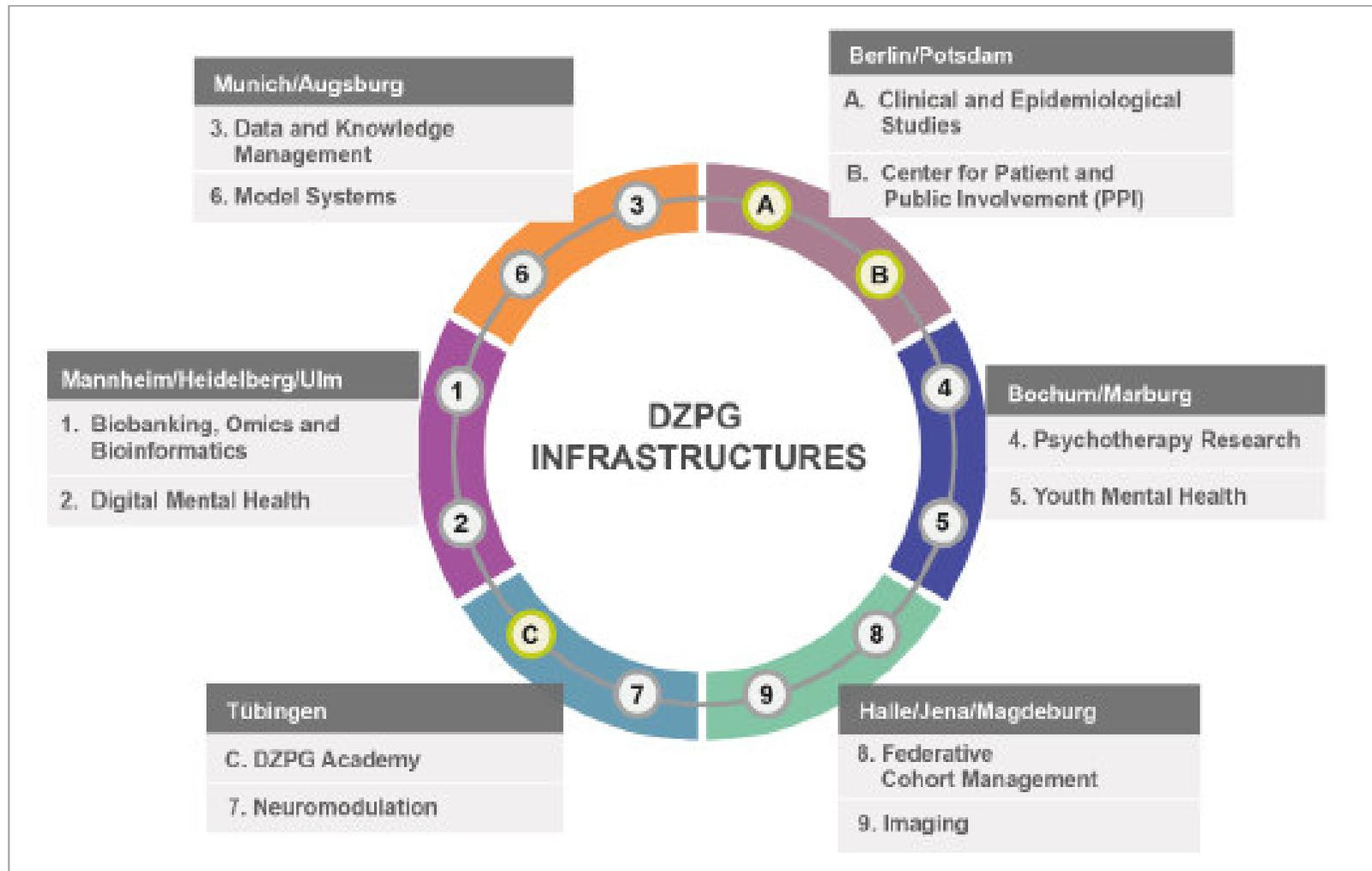
Elisabeth Schramm
(Freiburg)

Wolfgang Lutz
(Trier)

FIGURE 5. The Tübingen partner site jointly focuses on our three research domains: neuromodulation, enhanced psychotherapy and computational psychiatry, and will cooperate with the already existing German Centers for Health Research.



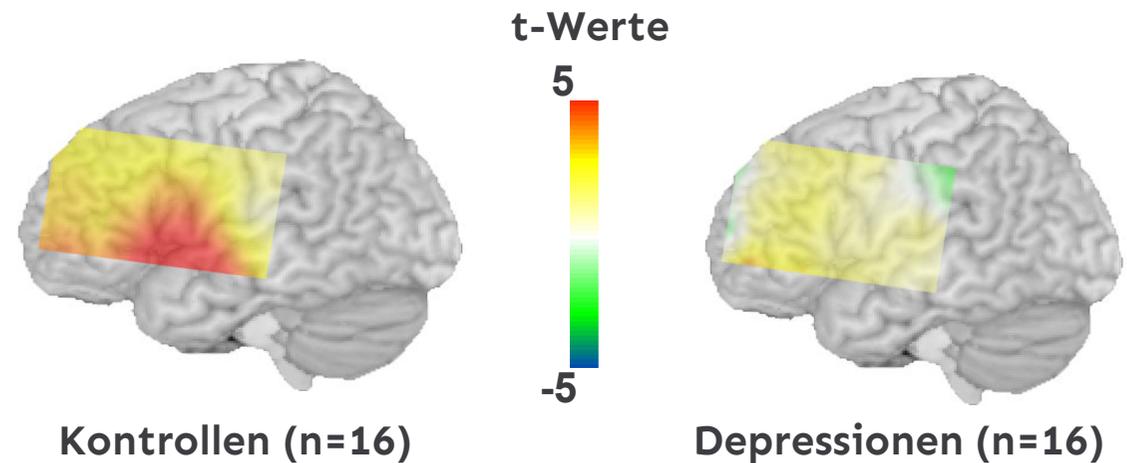
DZPG-Infrastrukturen



Enhanced Psychotherapy durch Neuromodulation

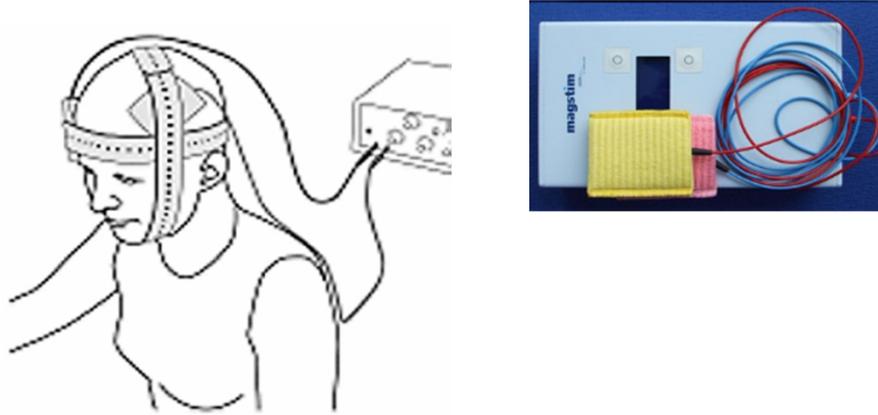


NIRS bei Arbeitsgedächtnis

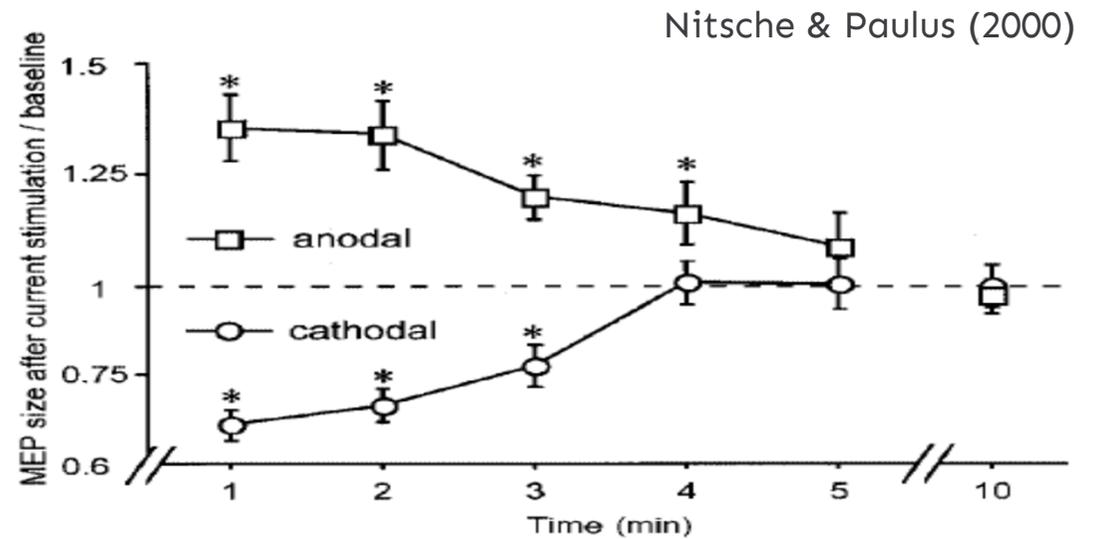


⇒ **Rationale für eine exzitatorische Neurostimulation des linken dorsolateralen Präfrontalcortex!**

Gleichstromstimulation (tDCS)



Fokale kortikale Stimulation durch externe Gleichstromapplikation



Mechanismen

- moduliert neuronale Erregbarkeit durch Verschiebung des Ruhepotentials
- zeigt polaritätsspezifische, lokale und transsynaptische Effekte
- wenig invasiv (z.B. 2mA für 20 min), einfache Placebo-Kontrolle

Personal View 

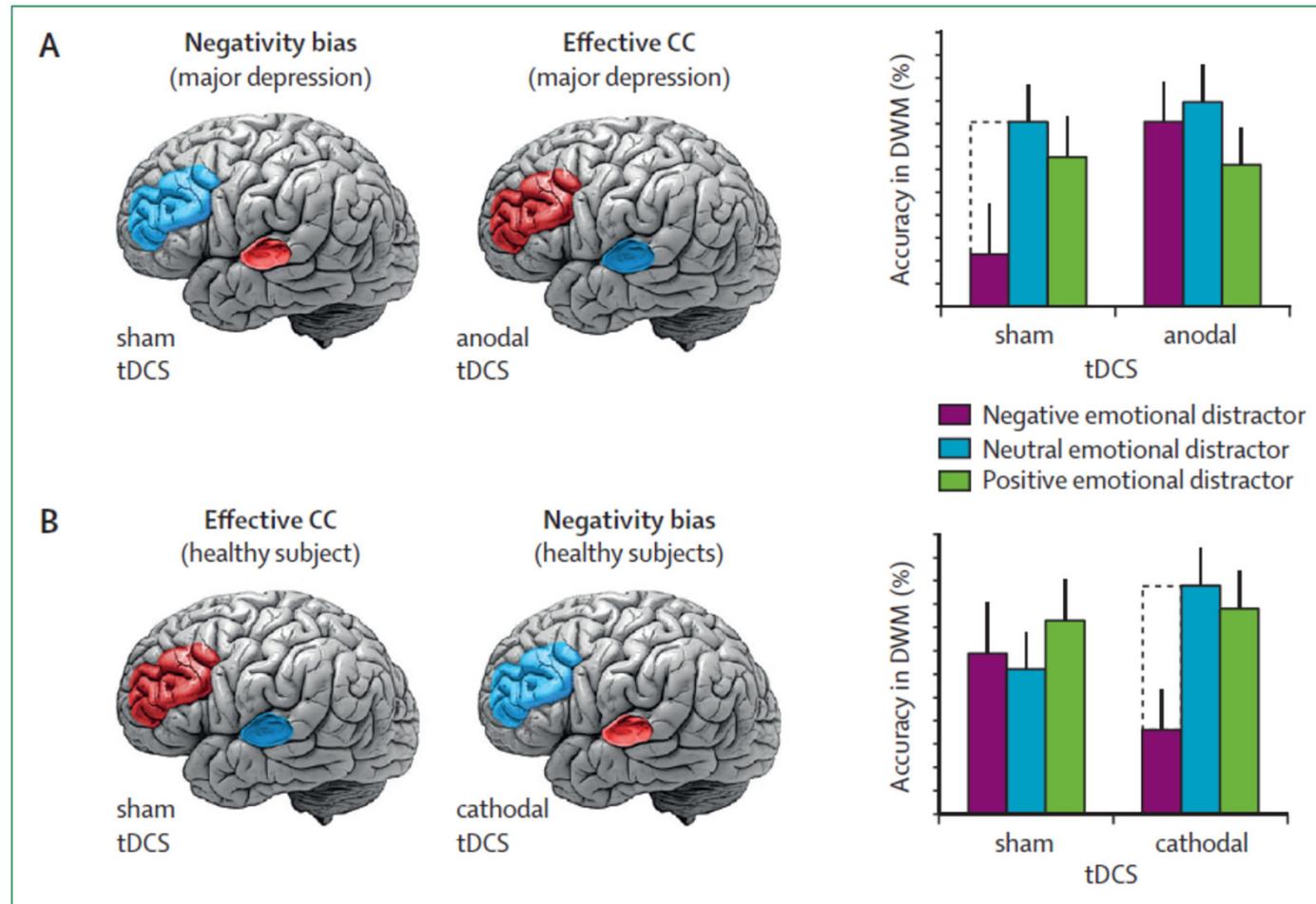
Targeting the biased brain: non-invasive brain stimulation to ameliorate cognitive control



Christian Plewnia, Philipp A Schroeder, Larissa Wolkenstein

Neurostimulation bei Depression mit tDCS

Plewnia et al., Lancet Psychiatry (2015)



Research

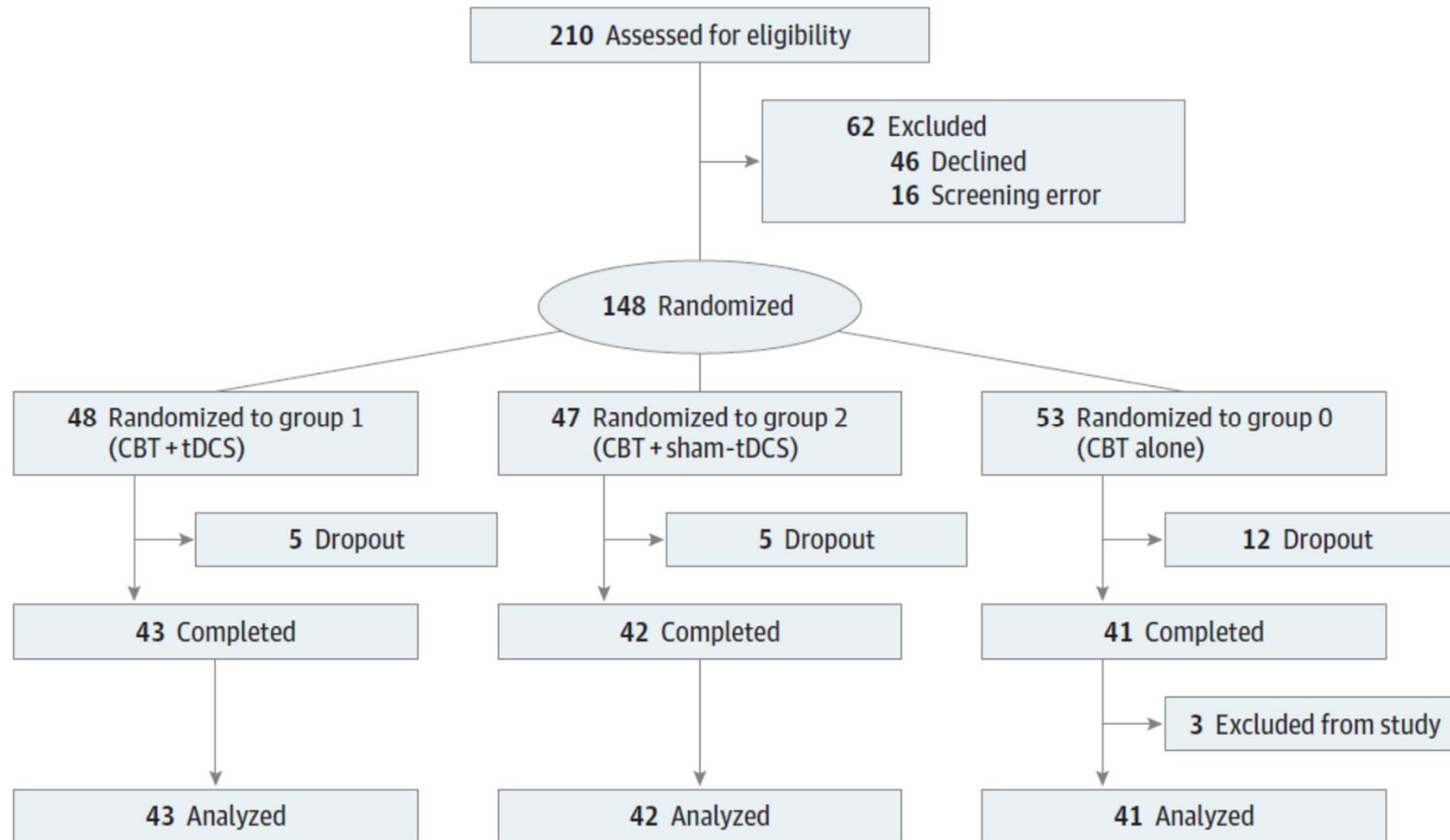
JAMA Psychiatry | [Original Investigation](#)

Efficacy of Augmentation of Cognitive Behavioral Therapy With Transcranial Direct Current Stimulation for Depression A Randomized Clinical Trial

Sabine Aust, PhD; Eva-Lotta Brakemeier, PhD; Jan Spies, PhD; Ana Lucia Herrera-Melendez, MD; Tim Kaiser, PhD; Andreas Fallgatter, MD; Christian Plewnia, MD; Sarah V. Mayer, PhD; Esther Dechantsreiter, MSc; Gerrit Burkhardt, MD; Maria Strauß, MD; Nicole Mauche, Dipl-Psych; Claus Normann, MD; Lukas Frase, MD; Michael Deuschle, MD; Andreas Böhringer, MD; Frank Padberg, MD; Malek Bajbouj, MD

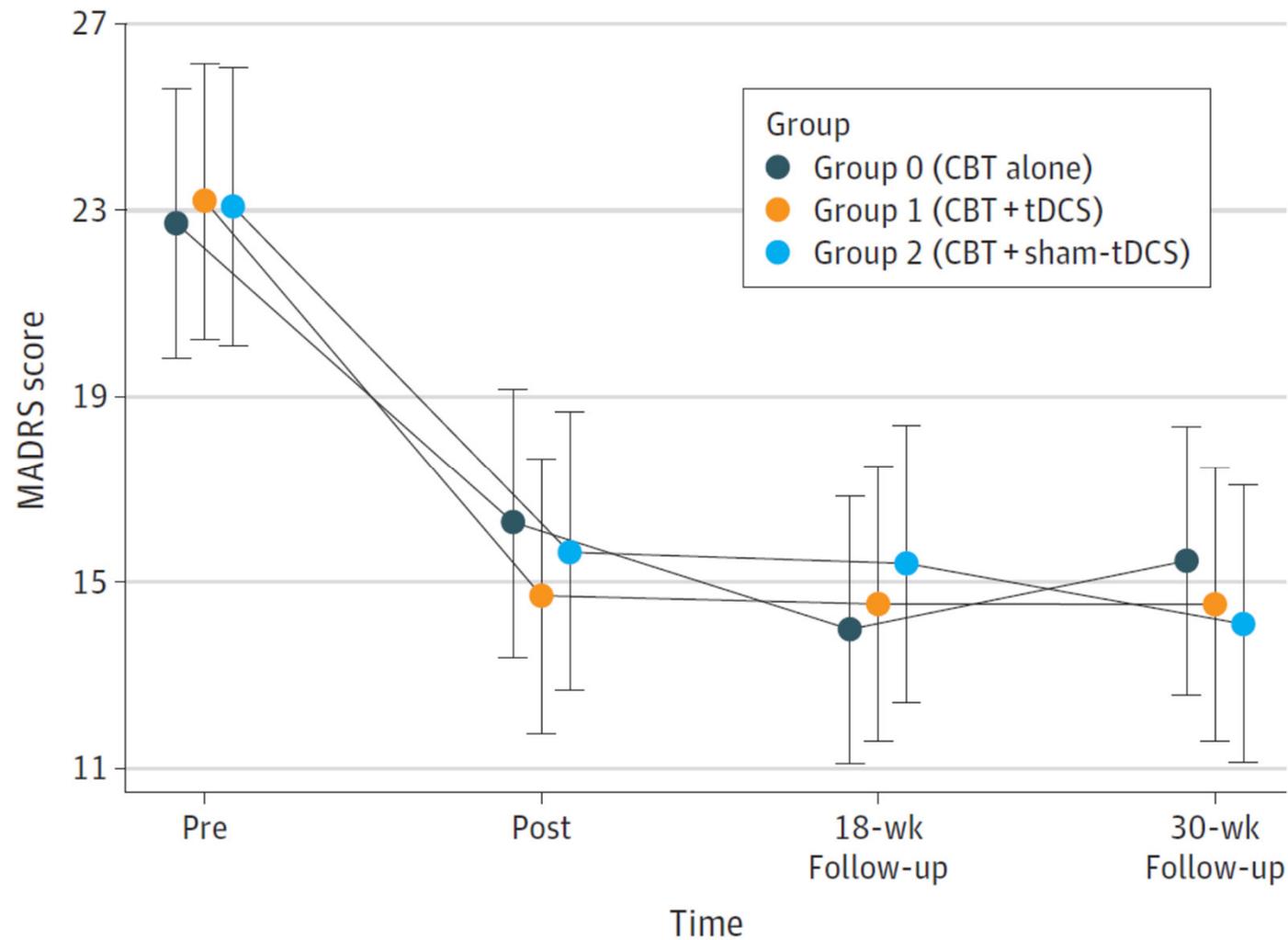
Neurostimulation bei Depression mit tDCS + CBT

Aust et al., JAMA Psychiatry (2022)



Neurostimulation bei Depression mit tDCS + CBT

Aust et al., JAMA Psychiatry (2022)



Psychotherapy and
Psychosomatics

Innovations

Psychother Psychosom 2023;92:101–112
DOI: 10.1159/000529117

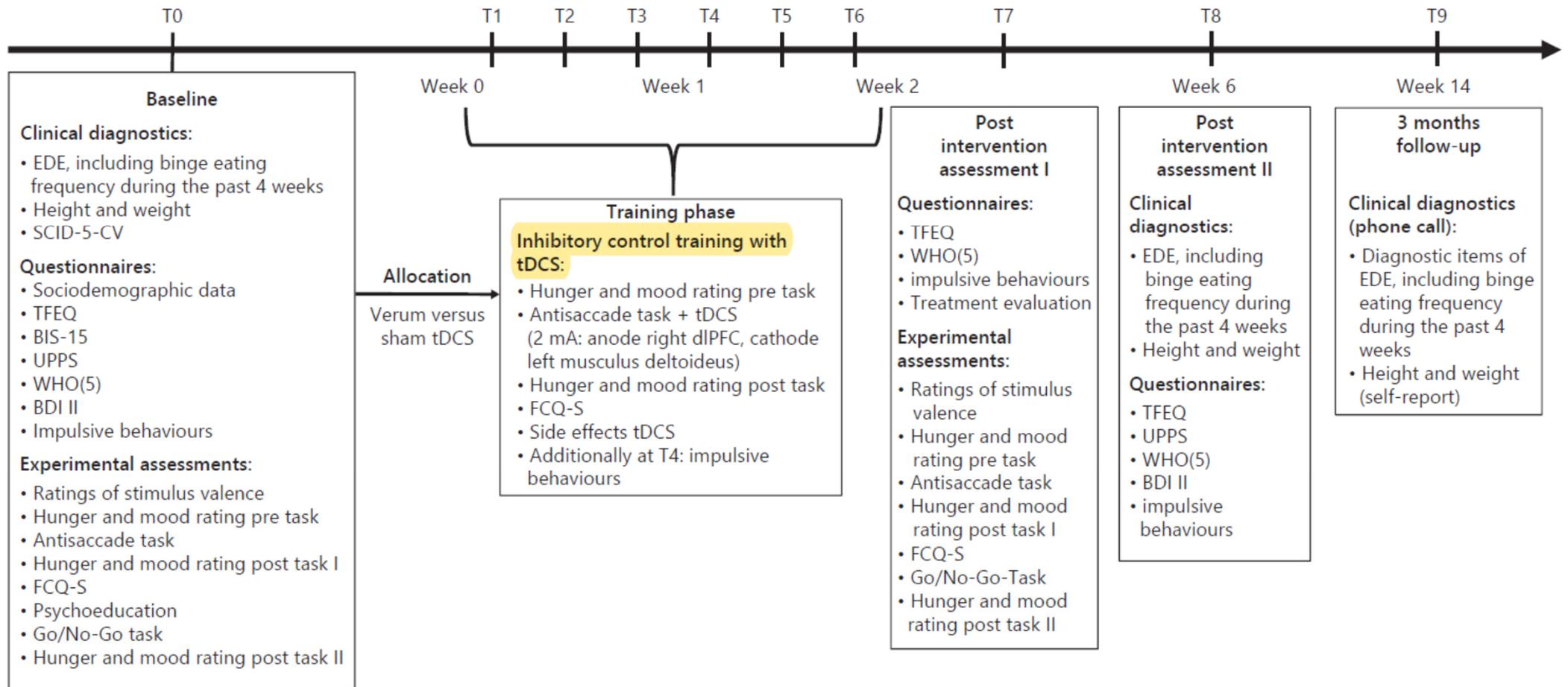
Received: September 20, 2022
Accepted: January 5, 2023
Published online: March 8, 2023

Inhibitory Control Training Enhanced by Transcranial Direct Current Stimulation to Reduce Binge Eating Episodes: Findings from the Randomized Phase II ACCElect Trial

Katrin E. Giel^{a, b} Kathrin Schag^{a, b} Sebastian M. Max^{a, b, d} Peter Martus^c
Stephan Zipfel^{a, b} Andreas J. Fallgatter^d Christian Plewnia^d

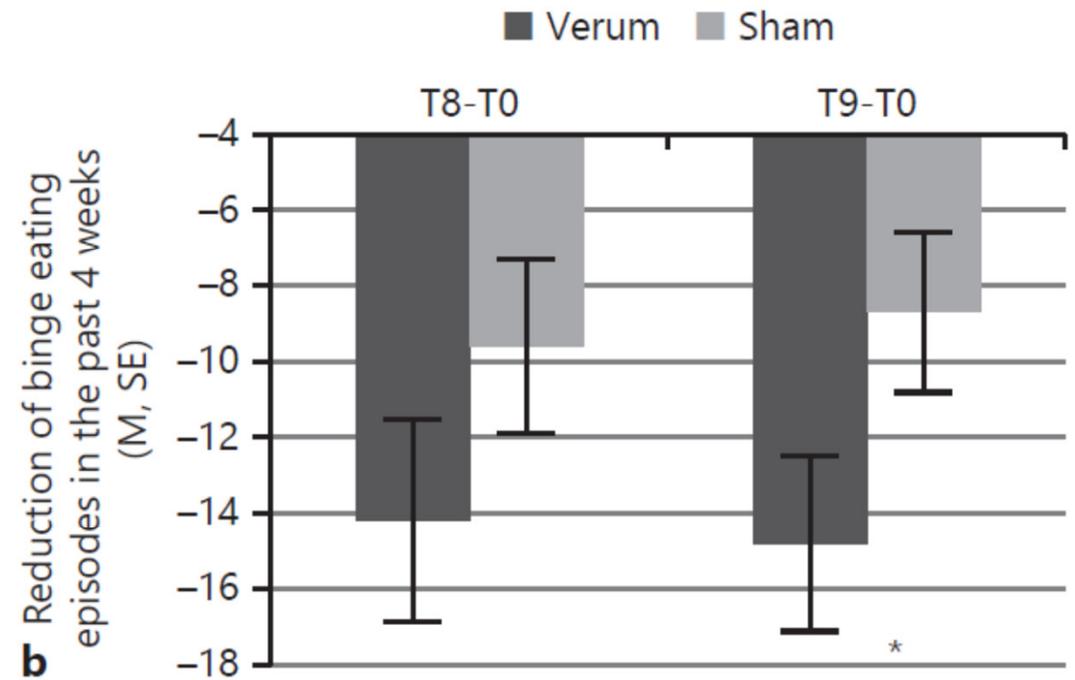
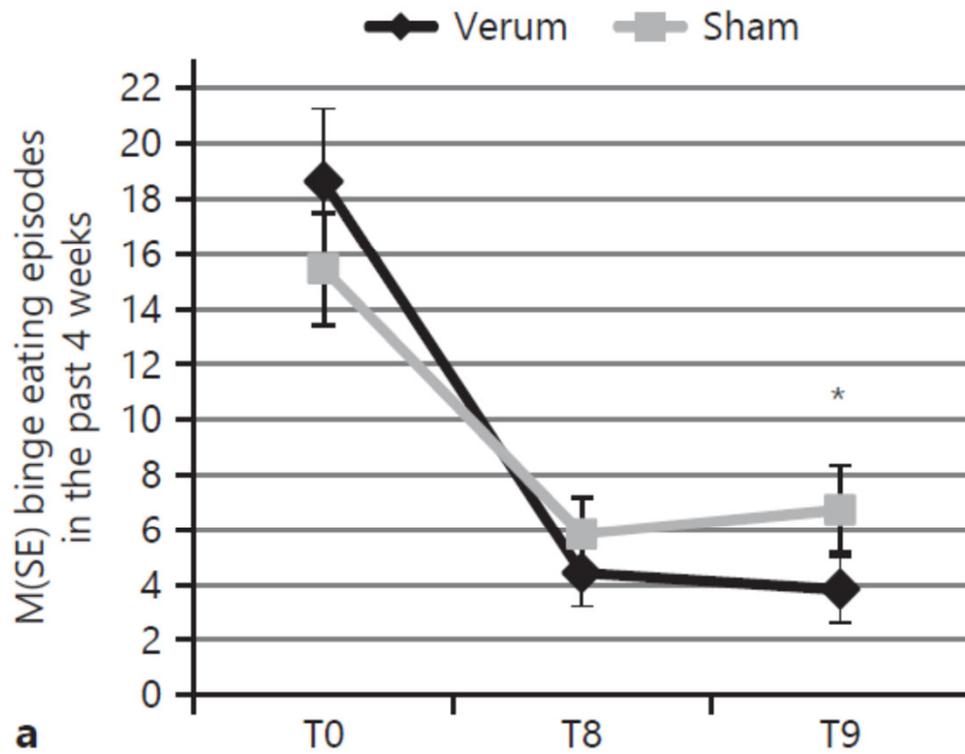
Neurostimulation bei Binge Eating mit tDCS + inhibitorische Kontrolle

Giel et al., Psychother Psychosom (2023)

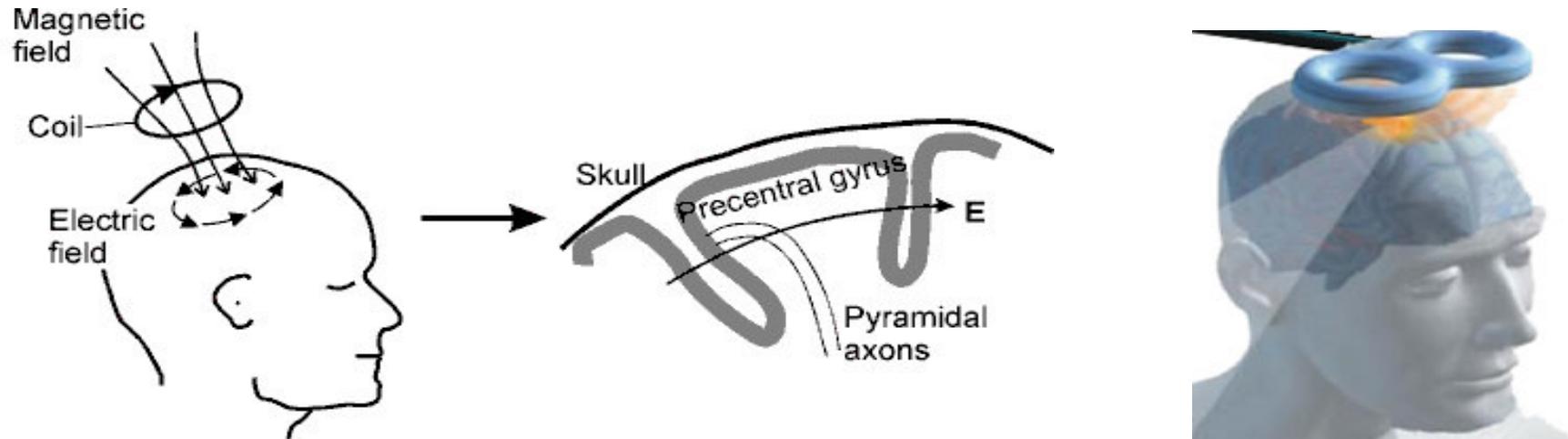


Neurostimulation bei Binge Eating mit tDCS + inhibitorische Kontrolle

Giel et al., Psychother Psychosom (2023)



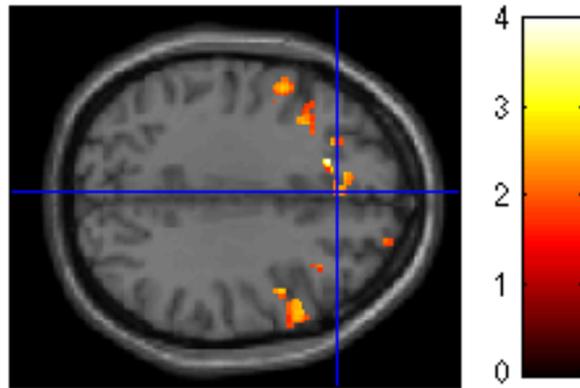
Transkranielle Magnetstimulation (TMS)



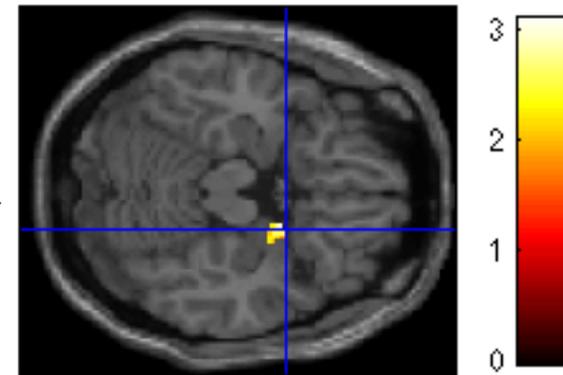
Mechanismen

- depolarisiert kortikale Neurone durch elektromagnetische Induktion
- interferiert mit der Funktion kortikaler Areale → 'virtuelle Läsion'
- moduliert durch repetitive Stimulation (rTMS) kortikale Aktivität in Abhängigkeit von der Frequenz (hochfrequent → Long Term Potentiation, niederfrequent → Long Term Depression)
- Neuroplastizität, (experimentelle) Therapie

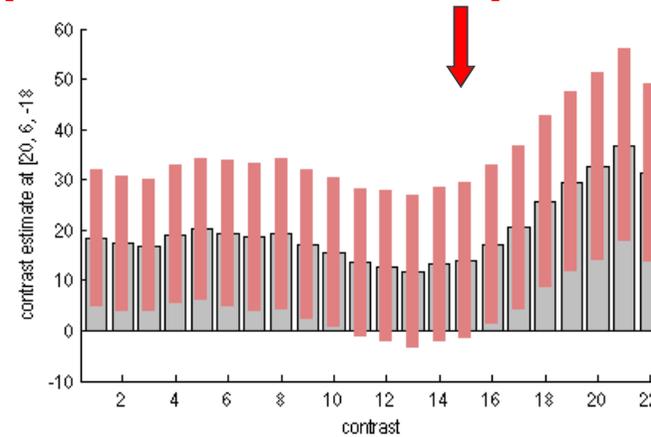
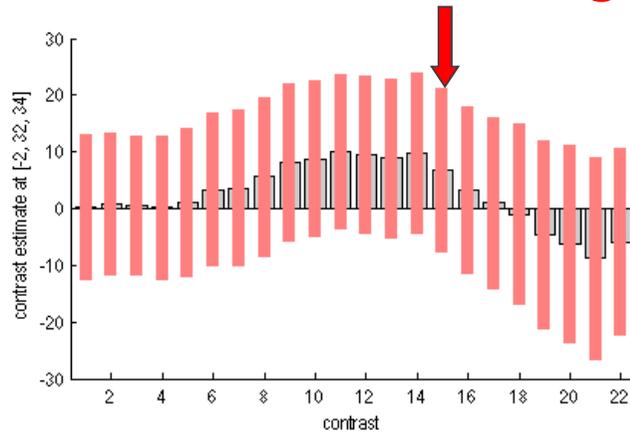
PFC: BA9, BA 46



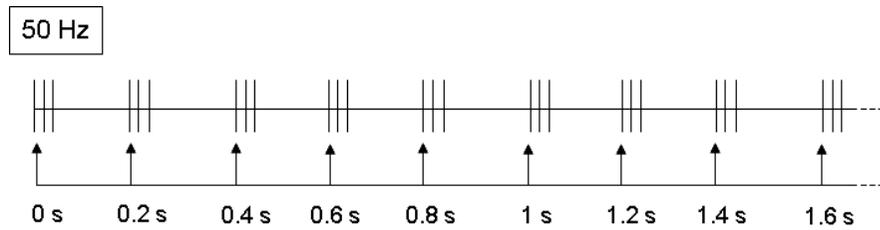
Amygdala



Start der Angstsymptome im Selbstreport

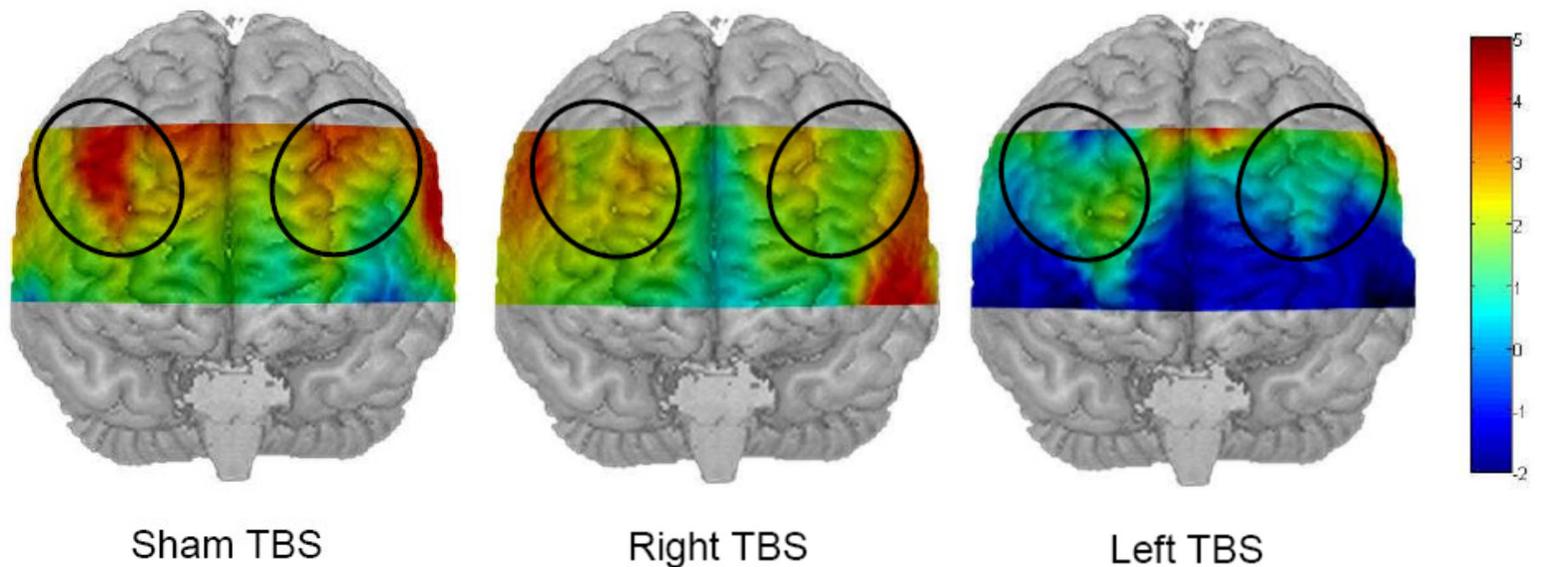


rTMS kann „Panikmuster“ im Gehirn induzieren Tupak...Fallgatter, HBM, 2011



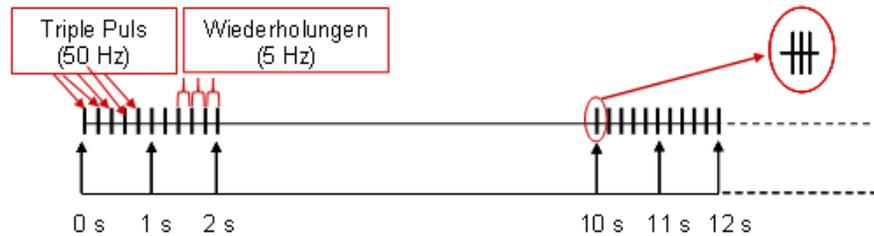
cTBS, inhibitorisch, 40 s

Angst vs. neutral



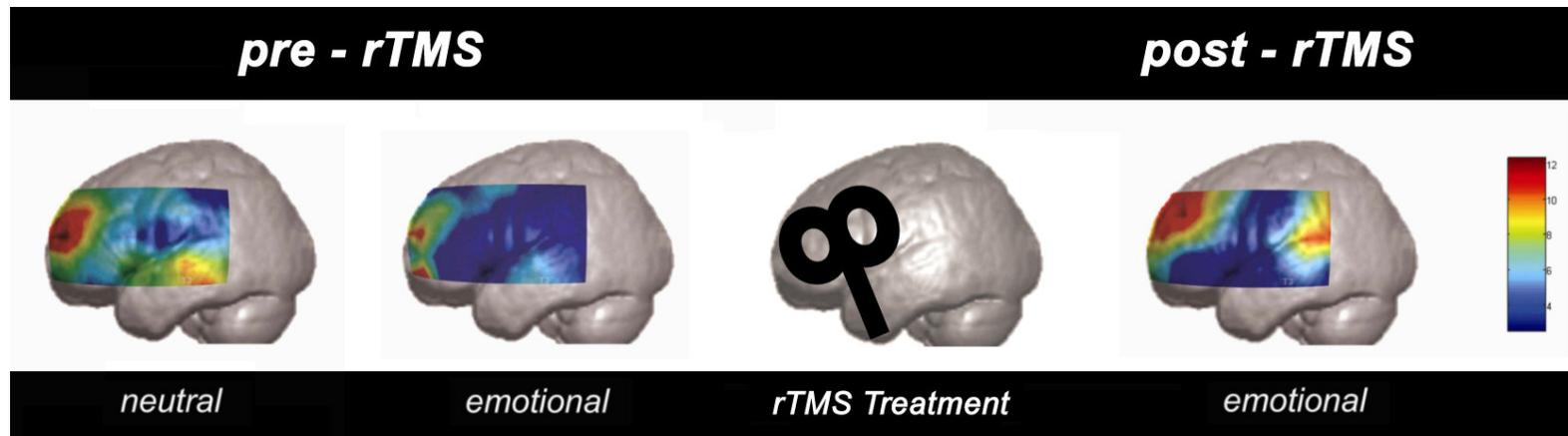
NIRS-geleitete rTMS bei Panikstörung

Dresler...Fallgatter, WJBP, 2009



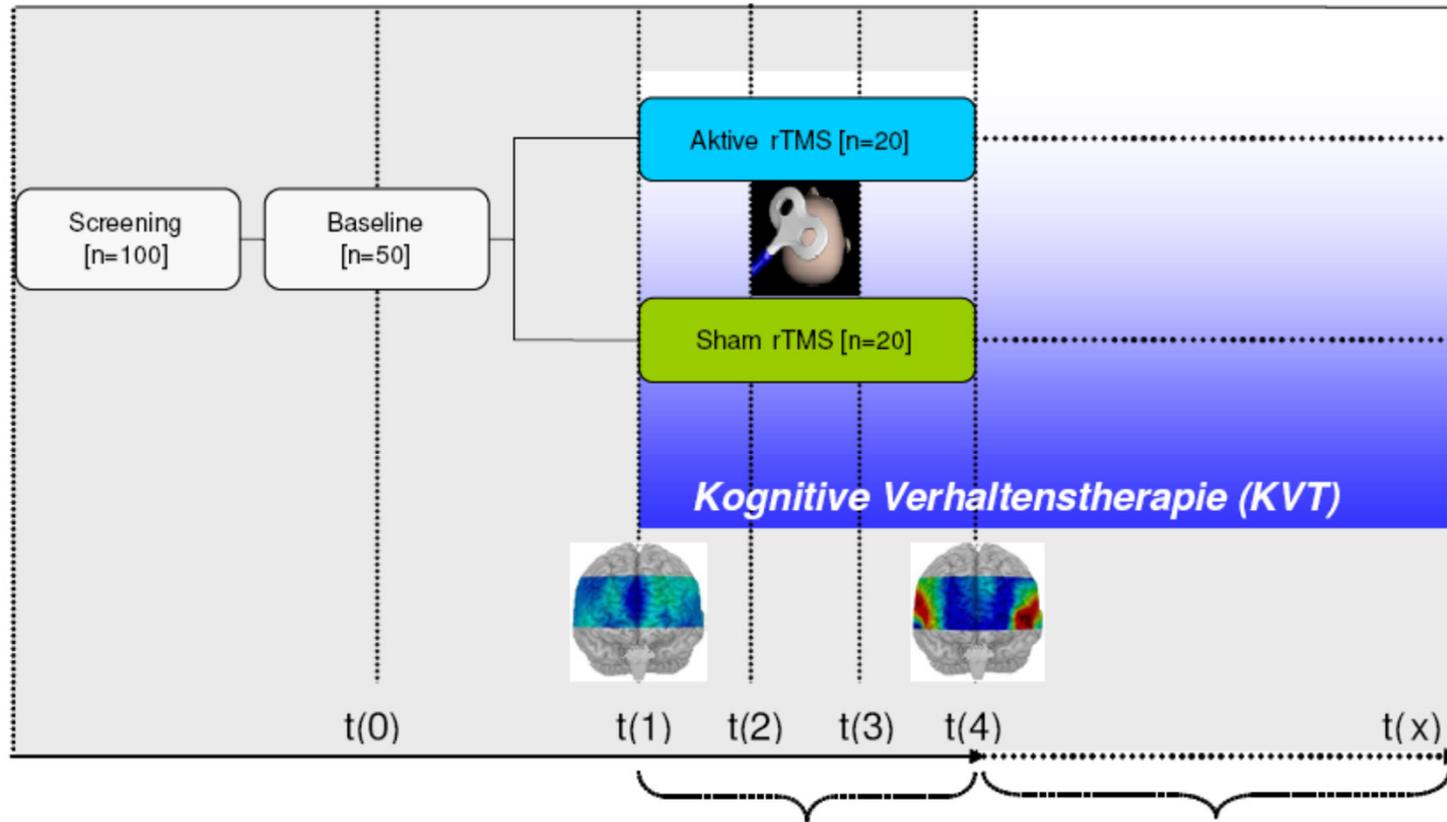
iTBS, exzitatorisch, 190 s

„Proof of concept“:



TMS zur Verstärkung von Psychotherapie Deppermann...Fallgatter, Zwanzger, 2014

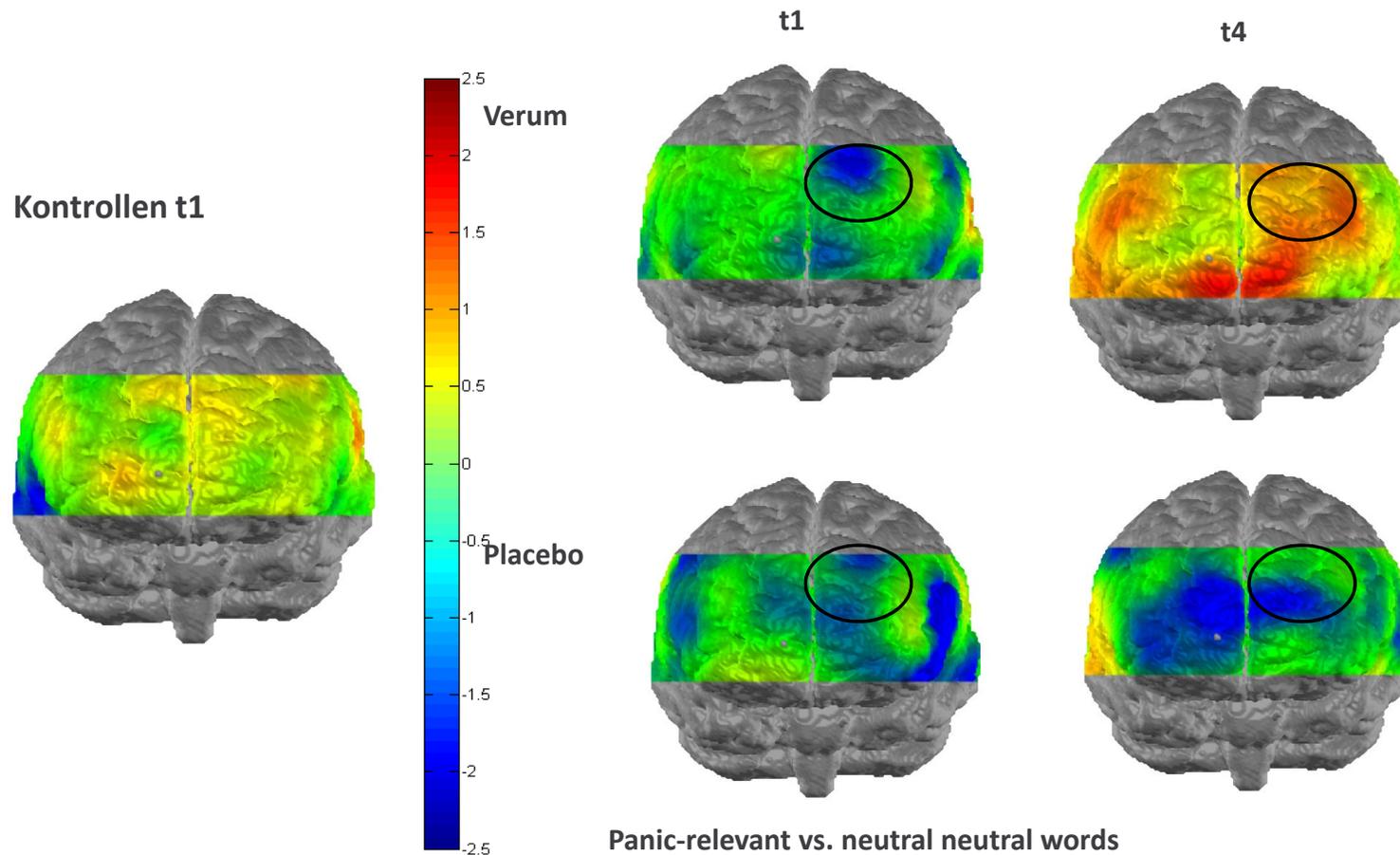
Verum: n=22, Sham: n=22, Kontrollen: n=23



iTBS aktiv/sham, 15 Sitzungen, linker DLPFC
NIRS, Wortflüssigkeit/Emotionaler Stroop/Westphal

Follow-Up

Linkslaterale iTBS bei Panikstörung => Aktivierung Kontrollnetzwerk



Korrelation mit klinischer Besserung?

- keine Unterschiede zwischen Placebo und Verum in Fragebogen zu Baseline
- hoch signifikante Reduktion der Paniksymptomatik zu t4 (nach NIRS) in beiden Gruppen
- weitere Symptomreduktion bis t5 in beiden Gruppen (Ende der CBT)
- keine signifikanten Unterschiede zwischen Verum und Placebo bei t4 und t5
- **aber Unterschiede in der Medikamentenveränderung**
 - **Placebo: höhere Dosierungen und häufigere Umstellungen auf neue AD**
 - **Verum: niedrigere Dosierungen und häufiger Beendigung der Medikation**

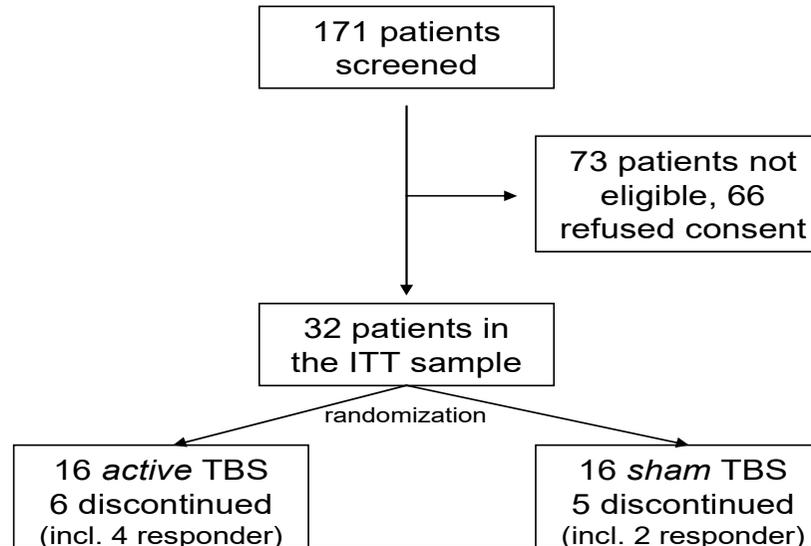


Deppermann...Fallgatter, Zwanzger, *Biomed. Res. Int.* 2014

Theta-Burst Stimulation (TBS) bei Depression

Plewnia ...Fallgatter, J Affect Dis (2014)

→ Aktuell
Multizentrische
BMBF-Studie



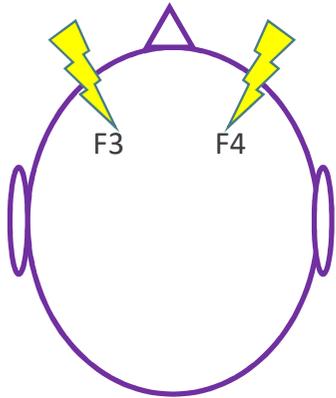
MADRS	active (n=16)	sham (n=16)	Wald χ^2 / p
response	9 (56%)	4 (25%)	4,154 / 0,042*
remission	7 (43%)	3 (19%)	3,210 / 0,073
HAM-D 17			
response	8 (50%)	6 (38%)	1,38 / 0,240
remission	8 (50%)	4 (25%)	2,288 / 0,130
BDI			
response	6 (38%)	5 (31%)	1,914 / 0,164
remission	6 (38)	1 (6%)	3,761 / 0,052*

Bilaterale TBS bei Depression

Konfirmatorische multizentrische klinische Studie: TBS-D

6 Wo 1 x tgl. 30 Sitzungen
2 x 600 Impulse

80% iTBS 80% cTBS



week	0			...	10	18					
visit	V0			V1-V10	V11-V20	V21-V30	V31	V32			
period	Screening / Baseline			Treatment			Follow-up				
	<ul style="list-style-type: none"> • study information • written informed consent • inclusion / exclusion criteria • physical examination • pregnancy test • ATHF, SKID-PD 			<p>Randomization of 236 eligible patients</p> <p>n = 118 combined iTBS / cTBS</p> <p>n = 118 sham stimulation</p>			<p>Treatment</p> <ul style="list-style-type: none"> • 30 sessions in 6 weeks • 5 sessions per week from Monday to Friday • ratings at V10, V20: <ul style="list-style-type: none"> ▪ MADRS ▪ HDRS17 ▪ BDI-II ▪ CGI • V30: measurement of primary outcome <ul style="list-style-type: none"> ▪ MADRS ▪ HDRS17 ▪ BDI-II / ▪ CTQ ▪ WHO-5 ▪ CGI ▪ WPAI ▪ Think-it 			<p>Follow-up</p> <ul style="list-style-type: none"> ▪ MADRS ▪ HDRS17 ▪ BDI-II ▪ CGI ▪ WHO-5 ▪ WPAI ▪ Think-it 	
	<ul style="list-style-type: none"> ▪ MADRS ▪ BDI-II / ▪ WHO-5 ▪ WPAI ▪ Think-it-Tool (cognition) ▪ EHI ▪ MRT / Multi-Omics 			<p>DEUTSCHE DEPRESSIONS HILFE</p> <p>deutsche depressionsliga</p>							

2 Satellitenstudien:

- (f)MRT (strukturell, funktionell), T. Ethofer
 - Multi-OMICS (Genetik, Epigenetik), V. Nieratschker
- ⇒ **Analyse von Prädiktoren und Mediatoren des Therapieerfolgs**
(Computational Psychiatry, T. Kaufmann, T. Hauser, T. Wolfers)

Registrierung: NCT04392947

7 Zentren: Tübingen, München, Ulm, Regensburg, Würzburg, Leipzig, Augsburg

aktuell n = 175

Weitere mögliche Optimierungsstrategien für TMS

➤ **Neuronavigierte TMS:**

- Zielführung der TMS-Spule durch individuelle Hirn-MRTs
- keine höhere Effektivität nachgewiesen (Hebel et al. 2021)

➤ **Accelerated TMS:**

Mehrfach tägliche TMS (iTBS) zur Verringerung der Behandlungstage bzw. Beschleunigung des Therapieeffekts (Fitzgerald et al. 2020)

- wahrscheinlich vergleichbare Effektivität, bisher kein Nachweis einer Therapiebeschleunigung

➤ **Stanford Accelerated Individualized Neuromodulation Therapy (SAINT):**

10x tgl. iTBS navigiert nach individueller funktioneller Konnektivität (Cole et al. 2021)

- hohe Effektstärke und schnelle Wirkung in Pilotstudie; Bestätigung in multizentrischen RCTs?

➤ **Deep-TMS:**

Spulen mit geringerer Fokalität zur Stimulation tieferer Hirnstrukturen (Levkovitz et al. 2015)

- bisher fokaler TMS nicht überlegen

➤ **Hirnzustandsabhängige „Closed-Loop“ TMS:**

EEG-getriggerte TMS (Zrenner et al. 2019)

- bislang keine Studie zur Effektivität, gerade in Tübingen gestartet

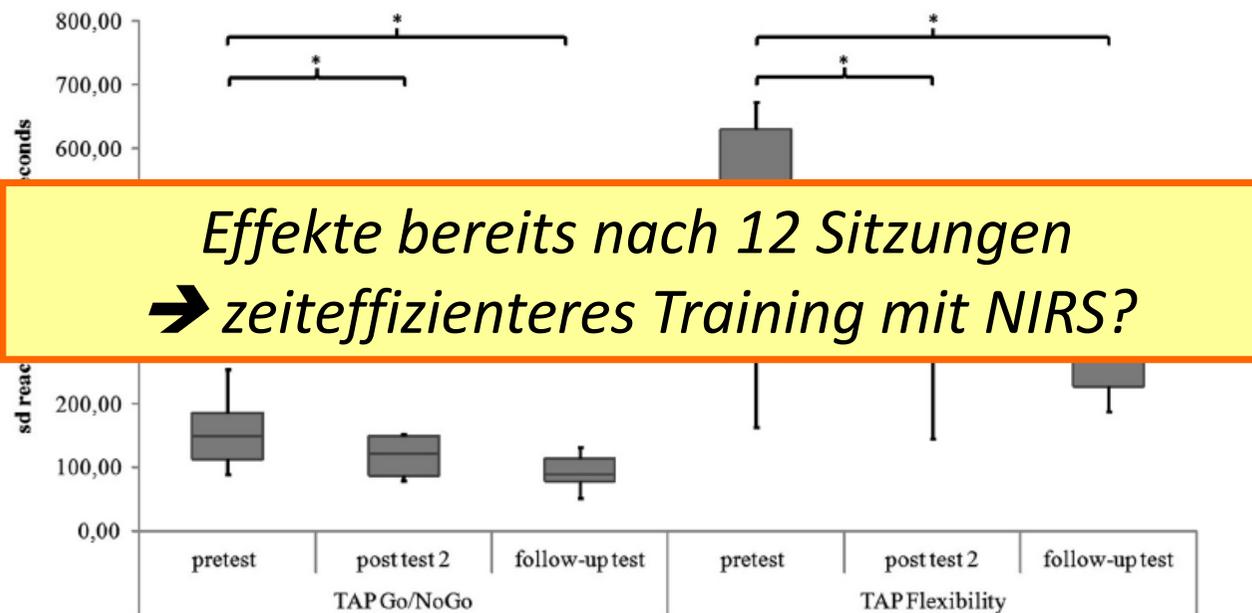
Neurofeedback (NF) als lernbasierte Psychotherapiemethode



ETG-4000 (Hitachi)



- Signifikante Symptomverbesserung in **neuropsychol. Daten (TAP)** nach **12 NIRS NF Sitzungen!** (Prä-Post Vergleich; n=9; 7-10 Jahre)



➔ *Ähnlich für Falschalarme...*

NIRS-NF (Erwachsene mit ADHS)

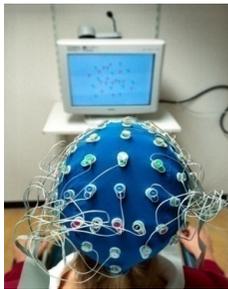
Mayer, Wyckoff, Fallgatter, Ehlis*, Strehl* (2015)

Kooperation mit
PD Dr. U. Strehl
(DFG-Projekt)

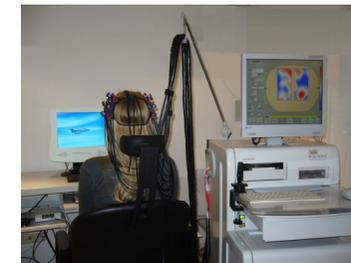
Neurofeedback Training (2 x 15 Sitzungen)



- Wirksamkeit?
- Vorhersage?



n=20

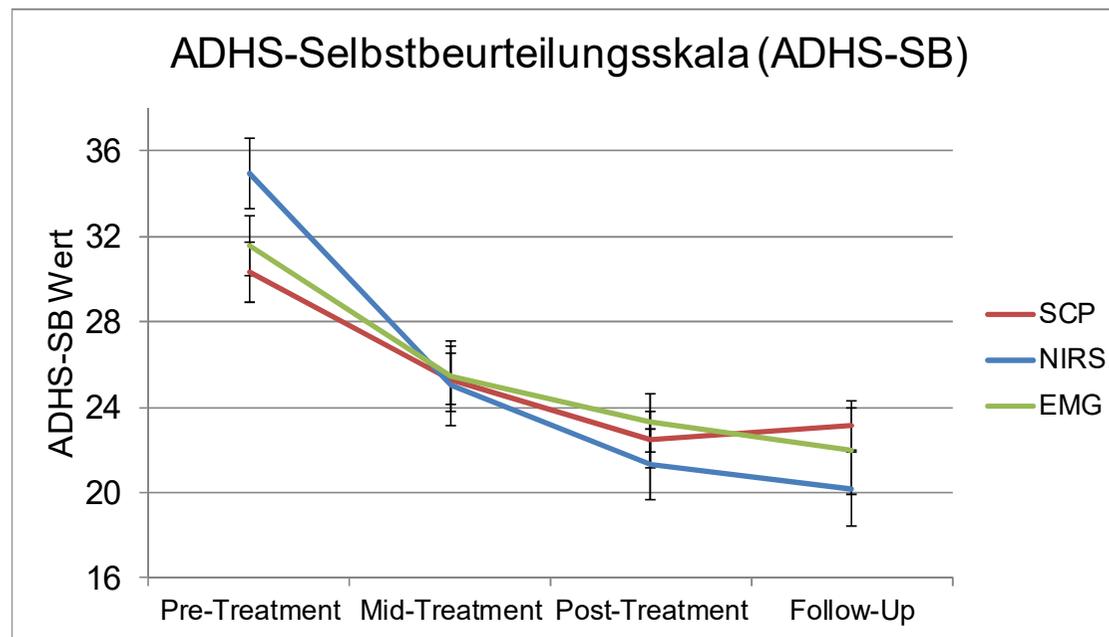


n=20

(vs. EMG [n=20])

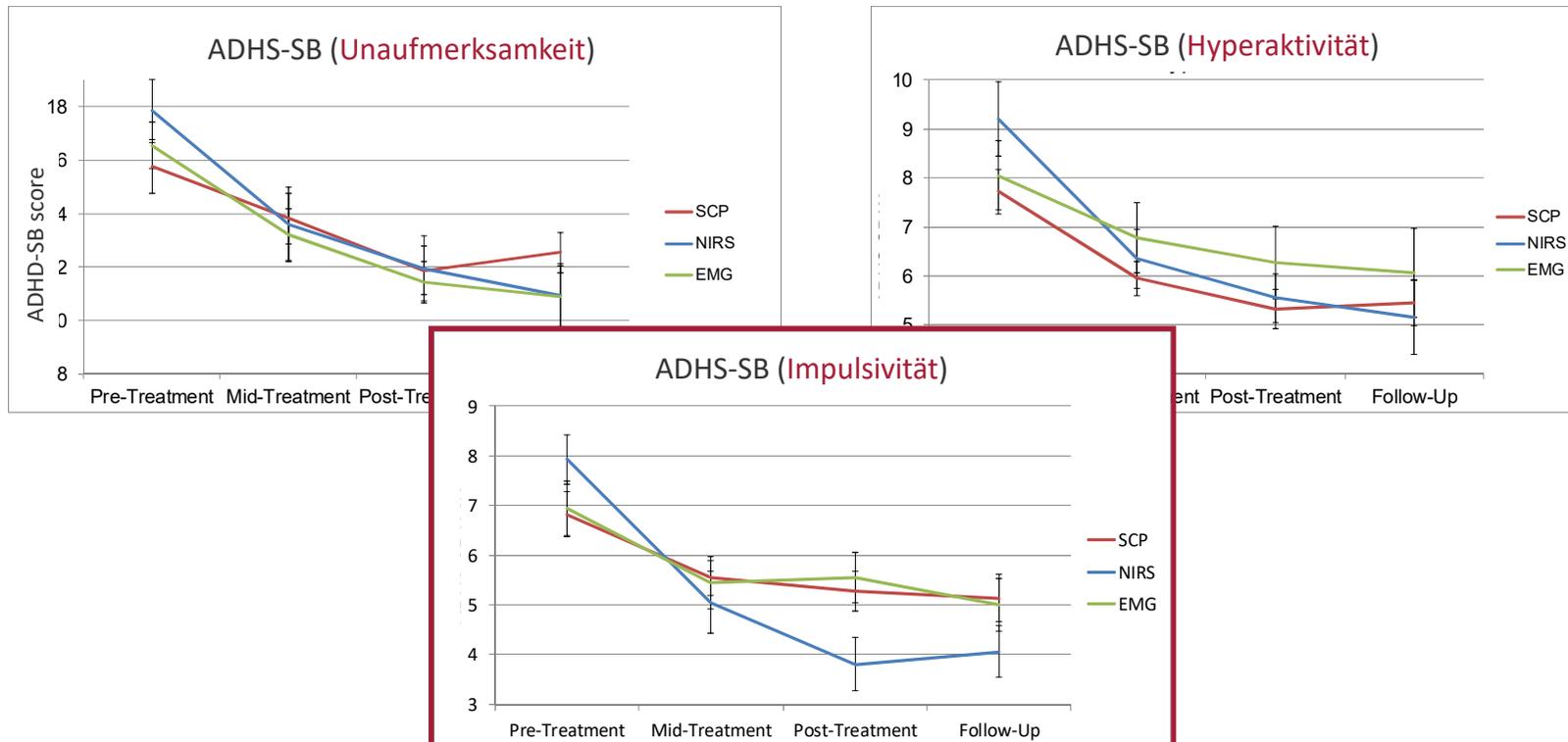
Ergebnisse (Symptomveränderungen)

[NIRS: n=20; EMG: n=18; EEG: n=22]

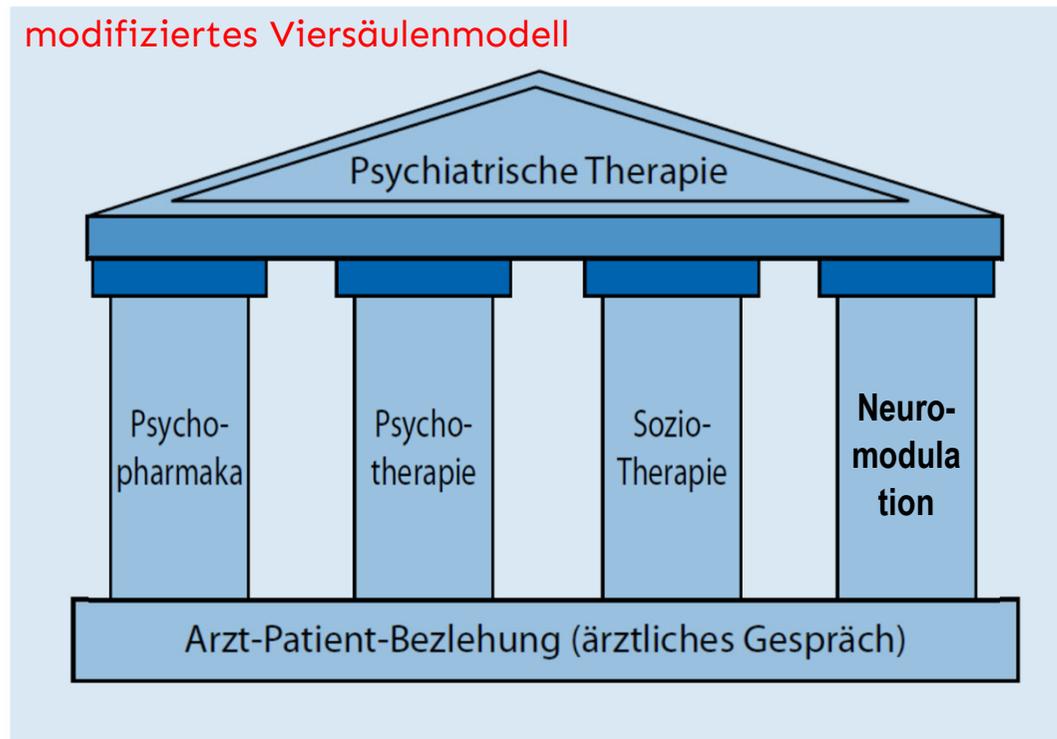


Ergebnisse (Symptomveränderungen)

[NIRS: n=20; EMG: n=18; EEG: n=22]



Neuromodulation als 4. Säule der Behandlung



■ **Abb. 4.1** Säulen der psychiatrischen Therapie.
(Möller, Laux, Deister 2005). (modifiziert 2024)

(Laux & Dietmaier, 2013, S. 20)

Enhanced Psychotherapy durch digitale Methoden (Ausser DIGAs, EMA und EMI)



European Archives of Psychiatry and Clinical Neuroscience
<https://doi.org/10.1007/s00406-023-01672-0>

ORIGINAL PAPER



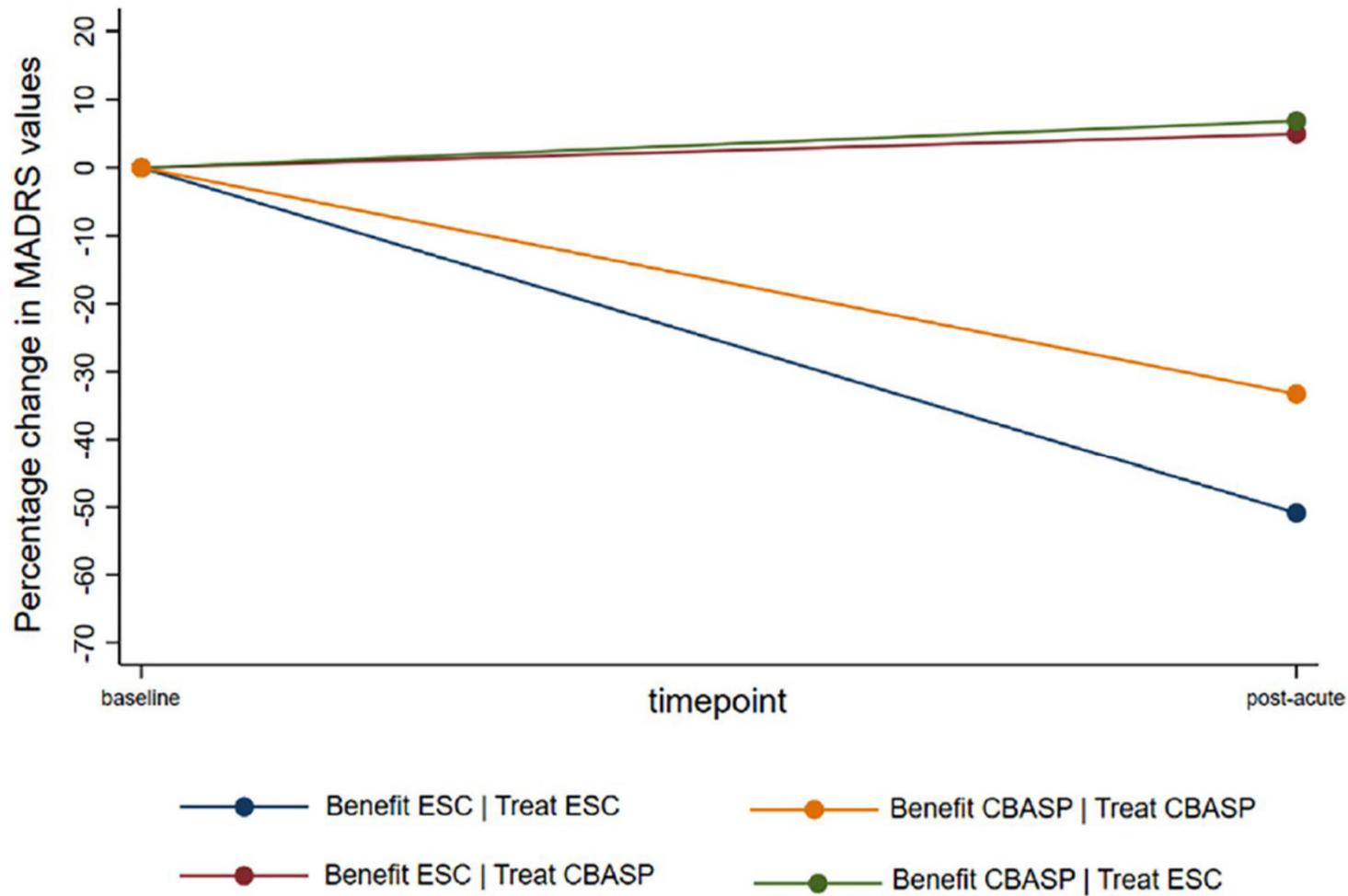
Identifying subgroups with differential response to CBASP versus Escitalopram during the first eight weeks of treatment in outpatients with persistent depressive disorder

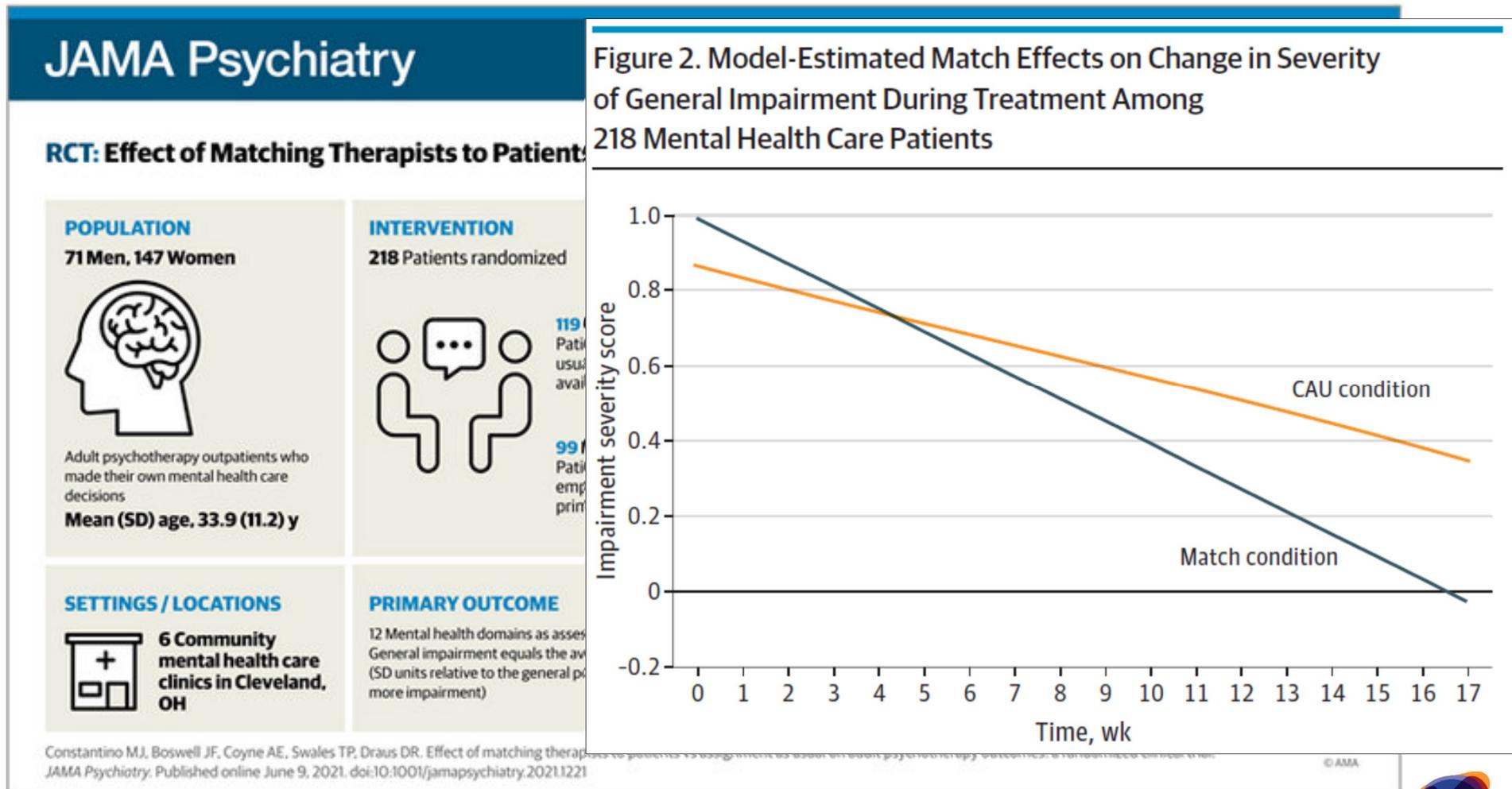
Ilinca Serbanescu¹  · Elisabeth Schramm² · Henrik Walter³ · Knut Schnell⁴ · Ingo Zobel⁵ · Sarah Drost⁶ · Thomas Fangmeier² · Claus Normann² · Dieter Schoepf⁶

Subgruppen-Ansätze (Sekundäranalyse Schramm et al., 2015) Serbanescu et al. (2023)

ESC +:
Weiblich
Kindheitstraumata
Life-Events
Suizidversuche

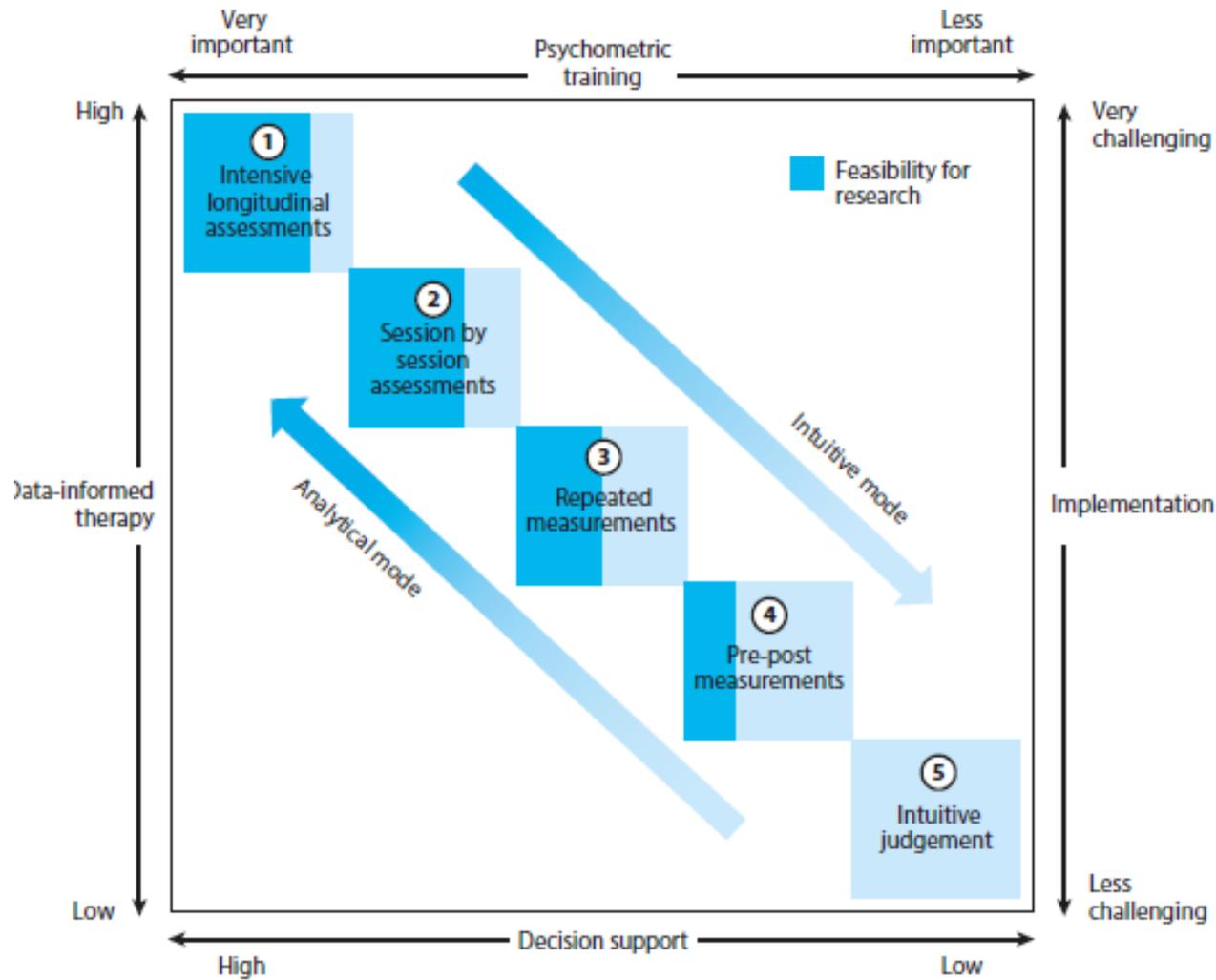
CBASP +:
Älter
Früherer Beginn
Mehr medikamentöse
Vorbehandlungen





Trier Treatment Navigator

=> Measurement-based and data-informed – „still on track?“ Lutz et al. (2022)



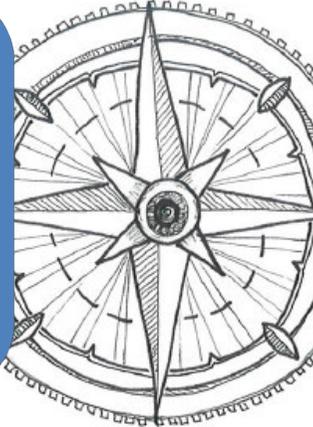
Trier Treatment Navigator => Measurement-based and data-informed – „still on track?“

Lutz et al. (2021, 2022)

Trier Treatment Navigator (TTN)

Personalized pre-treatment
recommendations

- Drop-out risk
- Treatment strategy



Personalized adaptive
recommendations

- Dynamic failure boundary
- Clinical problem solving tools

Personalisierte Behandlungsempfehlungen und adaptive Problemlösungsvorschläge => Verbesserung um $d=0.3$

Nah-Infrarot Spektroskopie (NIRS) zur Messung von Psychotherapieeffekten

**Nah-Infrarot Spektroskopie (NIRS, 650-850 nm) =>
Optische Messungen von Δ [O₂Hb] und [HHb]**



- Große ökologische Validität
(sitzende Position, keine Kopffixierung,
keine Geräusche, keine Angstauslösung)
- Geringe
Artefaktempfindlichkeit
- Gut akzeptiert von psychisch
Kranken und Kindern
- Einfache Anwendung
(kostengünstig, schnell,
transportable)

Vergleiche unsere NIRS-Publikationen in: **Human Brain Mapping**: 2007, 2008, 2012a, 2012b, 2012c , 2013a, 2013b **NeuroImage (clinical)**: 2006, 2007, 2008a, 2008b, 2011, 2012, 2013, 2014a, 2014b, 2014c, 2014d, 2014e, 2015, 2016a, 2016b, 2017, 2018a, 2018b, 2019, 2020, 2023

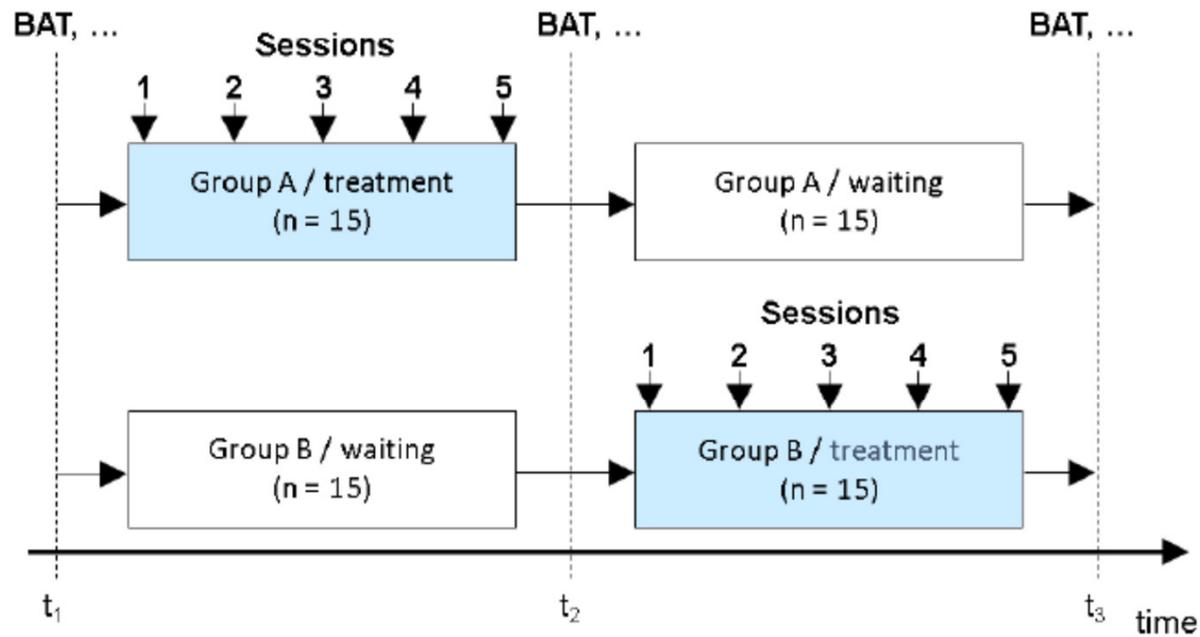


Fig. 1. Study design of the project. In the current article, the fNIRS measurements during the 5 sessions of exposure therapy are reported combined for both study groups (blue boxes).

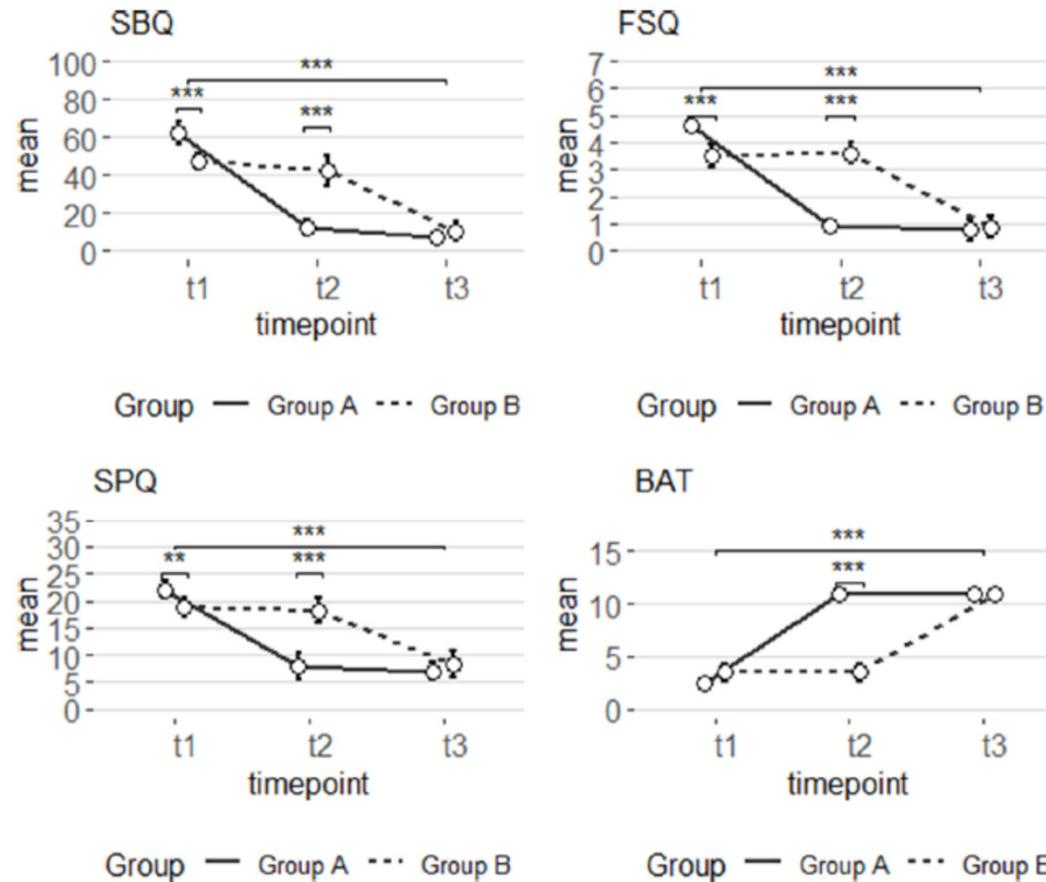


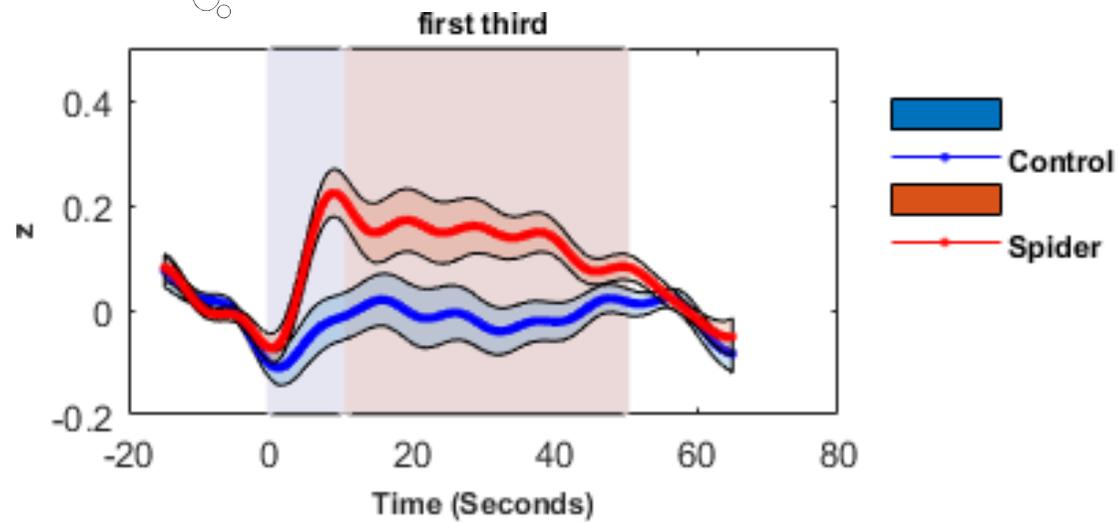
Fig. 2. Changes in symptom severity as assessed by questionnaires and behavioral avoidance test in the treatment and waiting phase in both study groups. * $p < .05$, ** $p < .01$, *** $p < .001$.

NIRS-Hirnaktivität phasenabhängig unterschiedlich

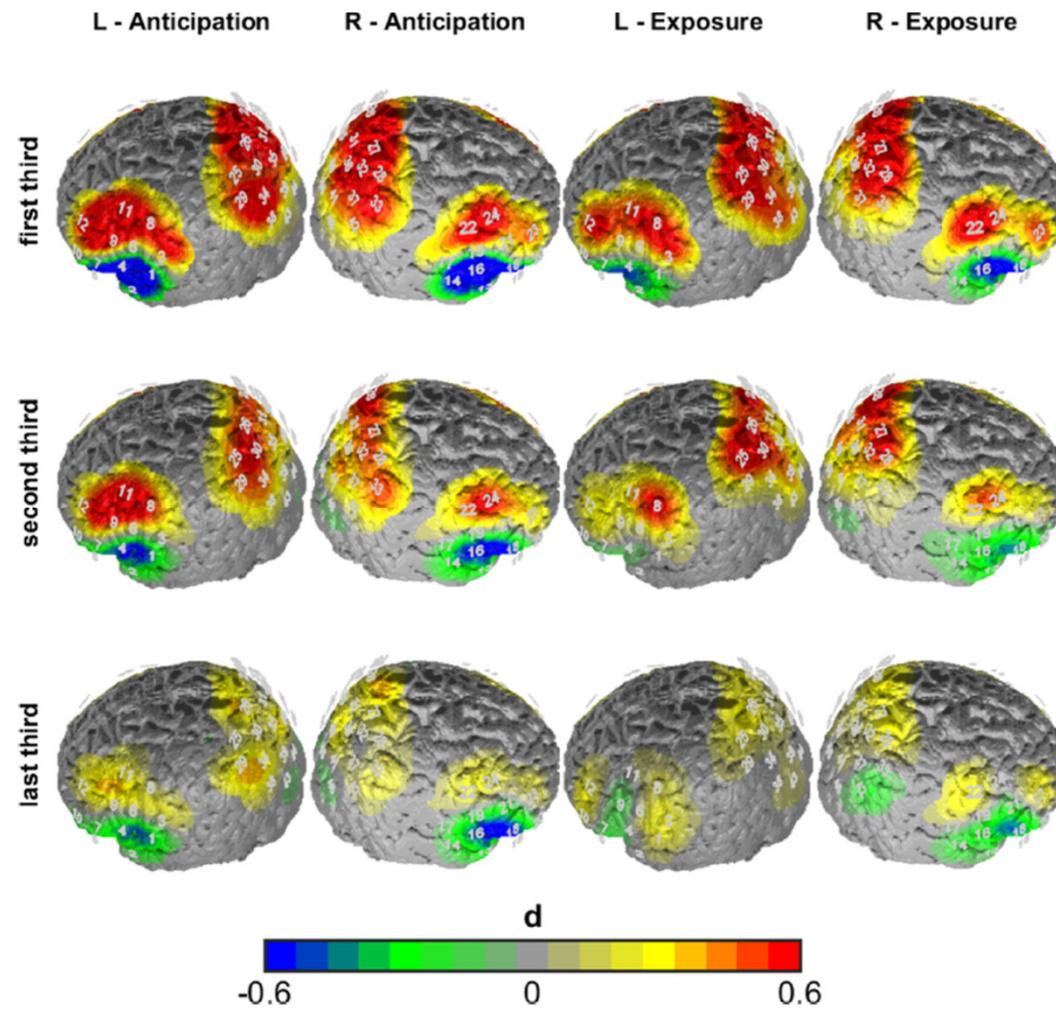
Rosenbaum et al. (2020)



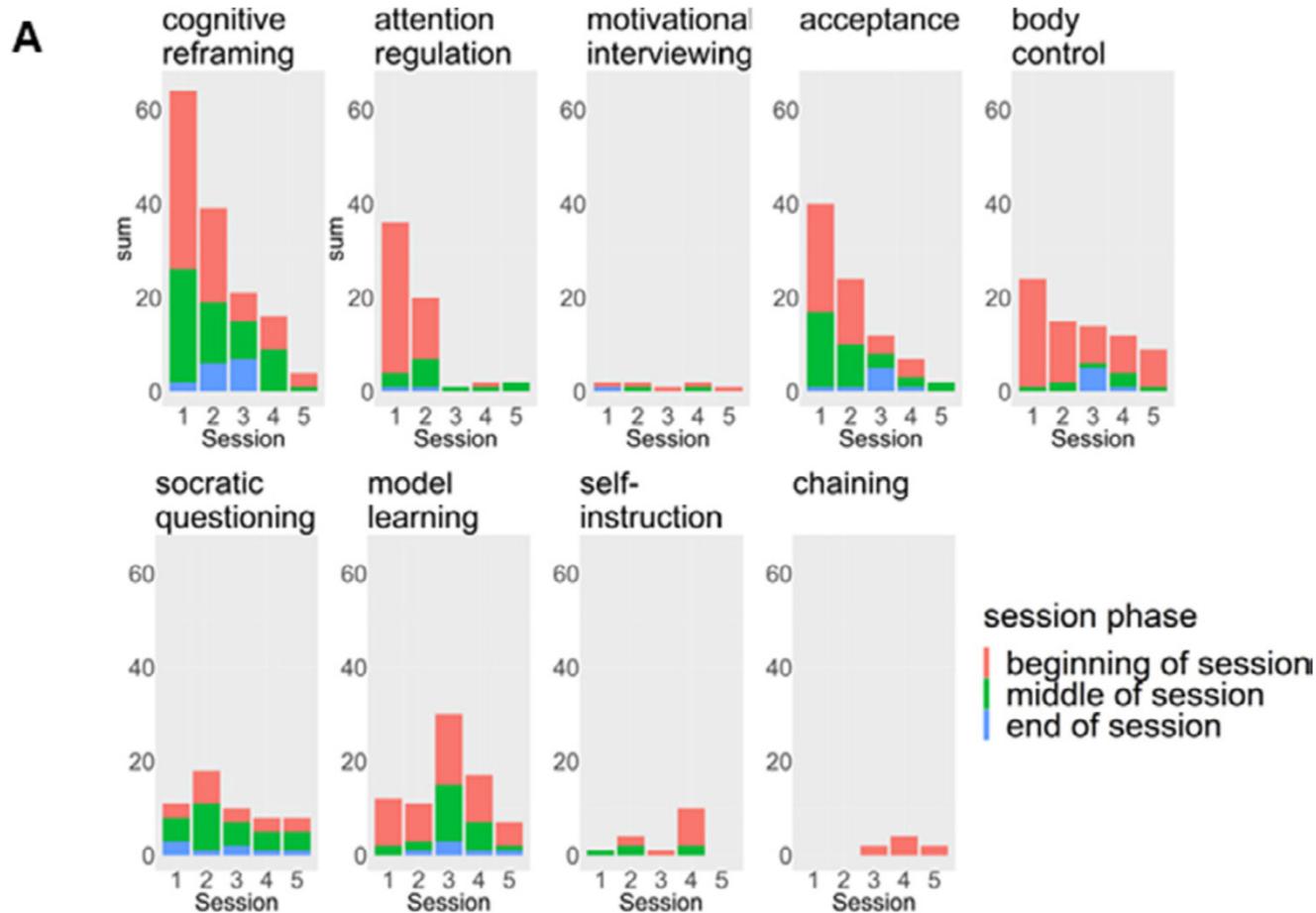
„Wie hoch ist Ihre Angst?“



Aktivierung des kortikalen Kontrollnetzwerkes (CCN) Rosenbaum et al. (2020)



CCN-Aktivierung ↔ psychotherapeutische Intervention Rosenbaum et al. (2020)



=> Möglichkeiten für komprimierte, auf effektive Elemente reduzierte Psychotherapie

Enhanced Psychotherapy durch Virtual Reality



Psychological Medicine (2018), 48, 642–653. © Cambridge University Press 2017
doi:10.1017/S0033291717002008

ORIGINAL ARTICLE

Assessing body image in anorexia nervosa using biometric self-avatars in virtual reality: Attitudinal components rather than visual body size estimation are distorted

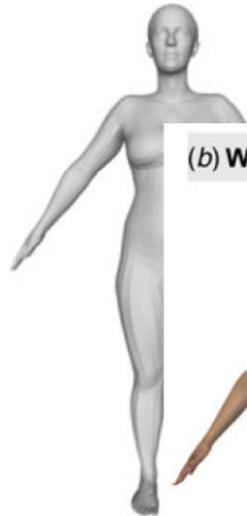
S. C. Mölbert^{1,2,3*}, A. Thaler^{2,3}, B. J. Mohler², S. Streuber⁴, J. Romero⁵, M. J. Black⁵, S. Zipfel¹, H.-O. Karnath⁶ and K. E. Giel¹

(a) Avatar generation

Body scan



Aligned body model



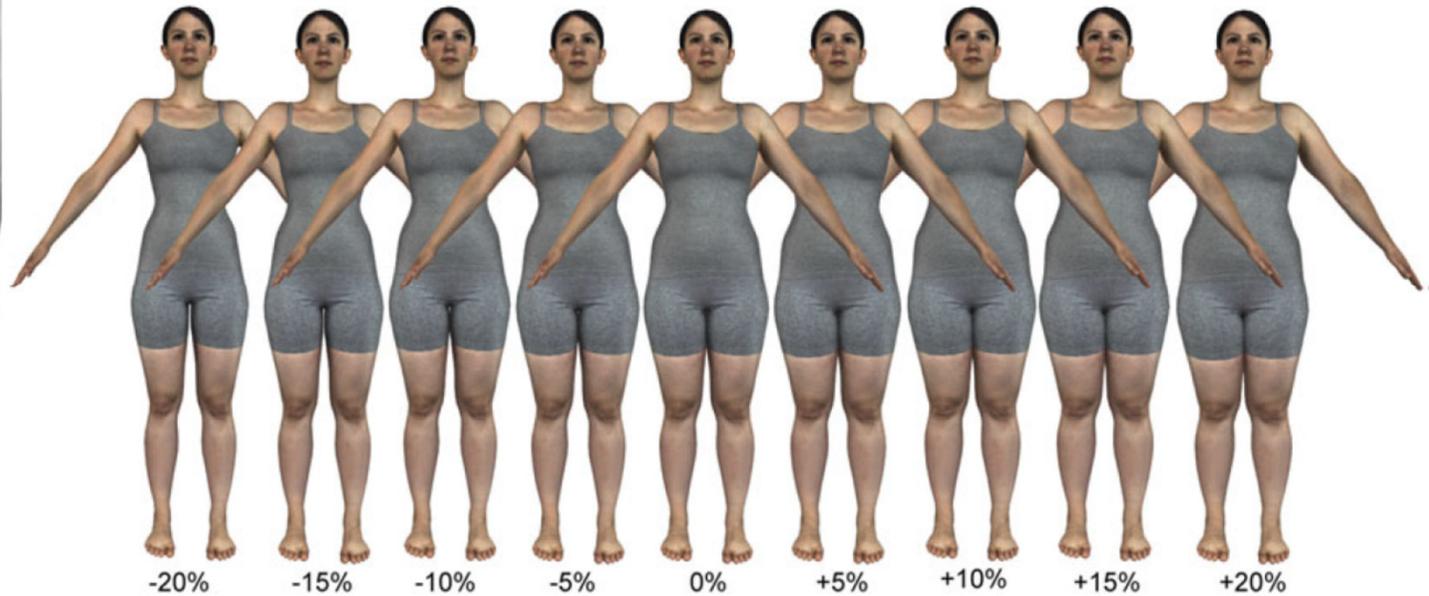
Exp 1: own texture



Exp 2: average texture



(b) Weight manipulation



Psychotherapy and
Psychosomatics

Innovations

Psychother Psychosom 2023;92:170–179
DOI: 10.1159/000530932

Received: December 19, 2022
Accepted: April 27, 2023
Published online: May 30, 2023

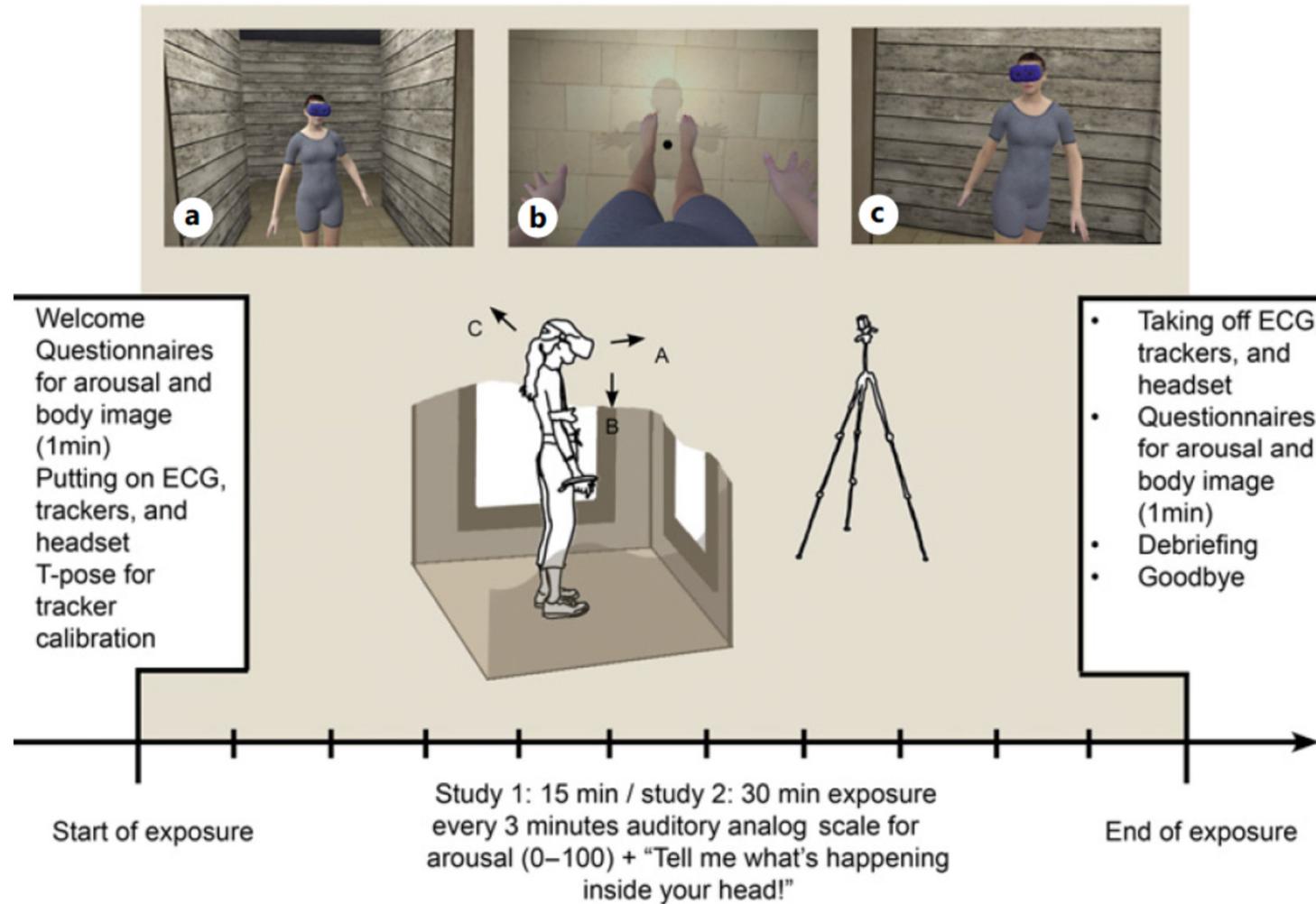
Virtual Reality Exposure to a Healthy Weight Body Is a Promising Adjunct Treatment for Anorexia Nervosa

Simone C. Behrens^{a,b,c} Joachim Tesch^b Philine J.B. Sun^a
Sebastian Starke^d Michael Black^b Hannah Schneider^a Jacopo Pruccoli^{a,e,f}
Stephan Zipfel^{a,c} Katrin E. Giel^{a,c}

Virtual Reality bei Essstörungen

© Simone Behrens





Virtual Reality bei Angst

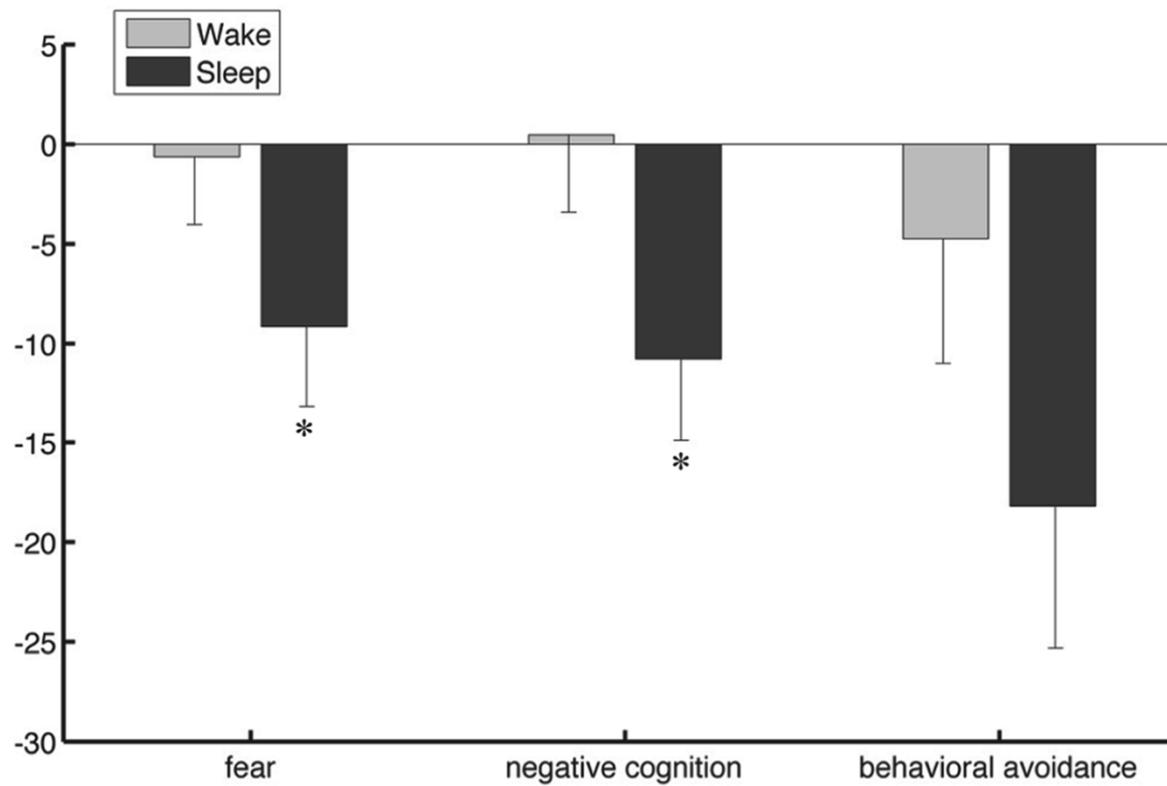
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Schlaf zur Verstärkung von Expositionstherapie

Kleim et al. (2014)

90 Minuten Schlaf nach Virtueller Realität Exposition bei Spinnenphobie



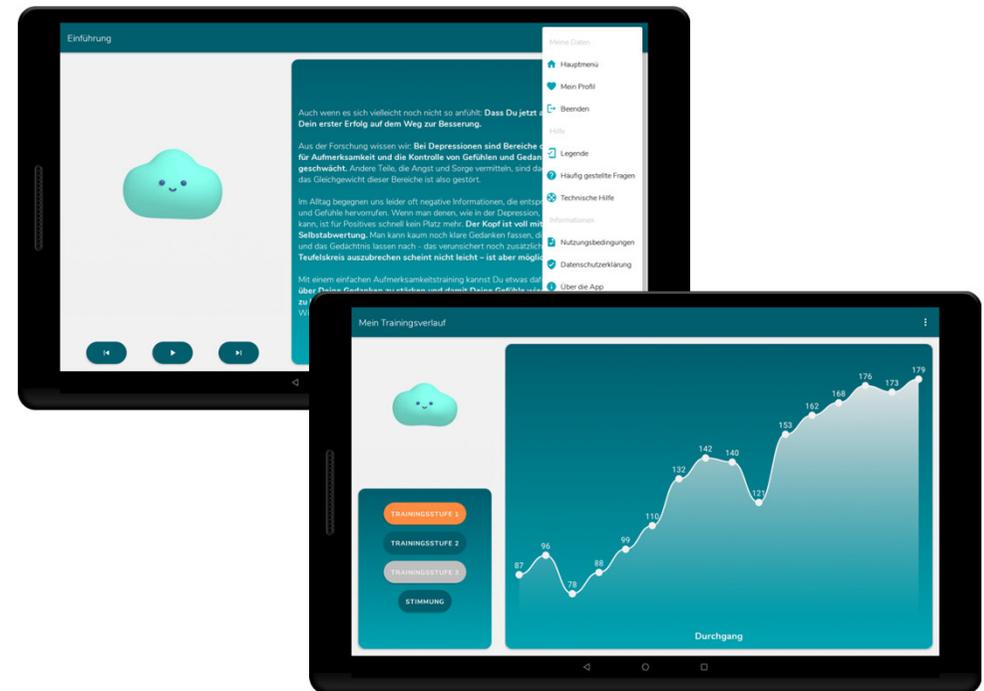
Enhanced Psychotherapy durch kognitives Training



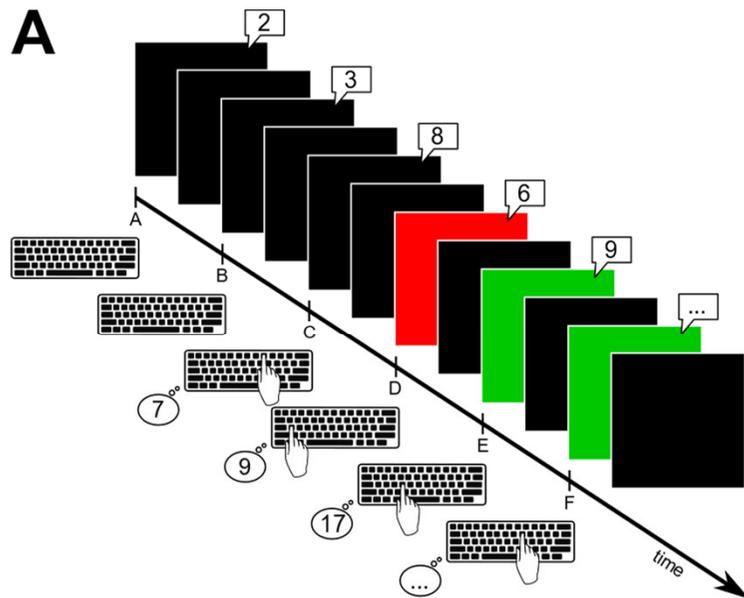
- Kognitive Trainings sind effektiv, verträglich und stärken Patientenautonomie
 - Geringe Nutzung in klinischer Routine
- **mobile Endgeräte & Gamification**



de:press®

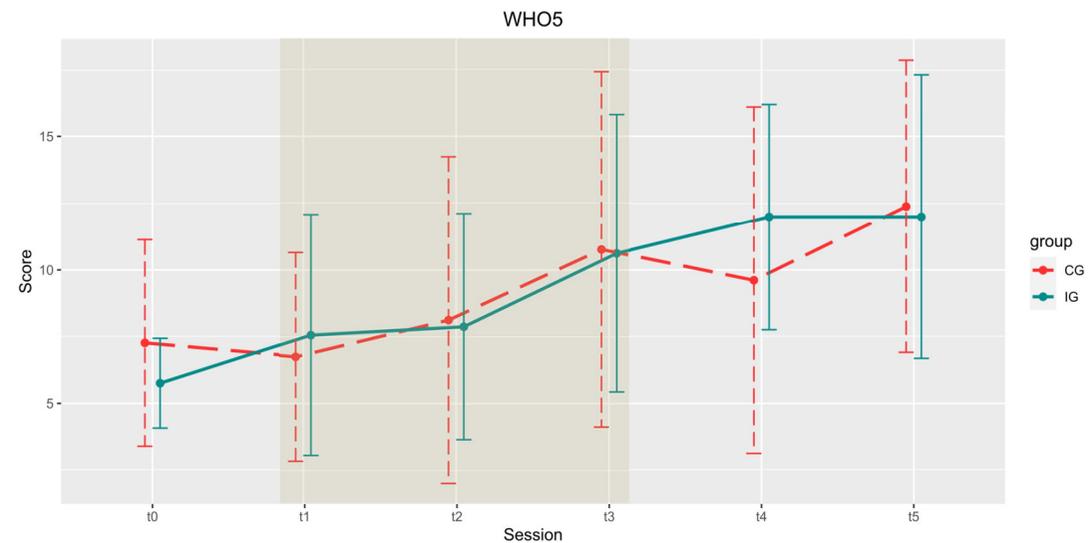
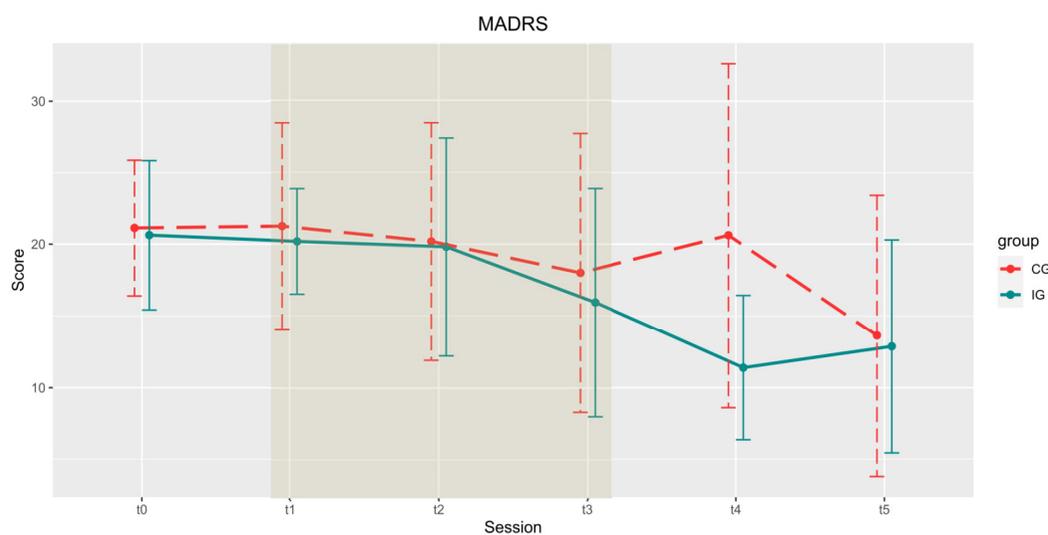


Adaptiver Paced Auditory Serial Addition Task (PASAT)



Erste Studie (N = 32), abgeschlossen: „gamified“ Training übertrifft „non-gamified“ Training.

- depressive Symptomatik verringerte sich bei beiden Studiengruppen
- allgemeines Wohlbefinden stieg an
- durchweg positive Bewertung der Nutzererfahrung.



Kognitives Training

Machbarkeit



**Sicherheit und
Verträglichkeit**

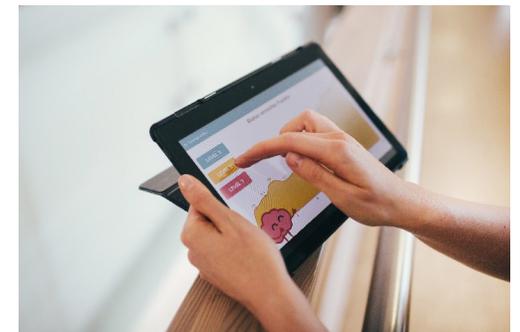


**Medizinischer Nutzen
und Wirksamkeit**



Research Agenda:

- Pilotstudie – abgeschlossen 2022
- klin. Studie I (ambulant) – abgeschlossen 2023 / in Auswertung
- klin. Studie II (stationär) – Start Q1 2024
- klin. Studie III (digital) – Start Q3 2024
- **de:press[®]** kann kostenfrei in Studien verwendet werden.
Bei Interesse: **christian.plewnia@uni-tuebingen.de**



Enhanced Psychotherapy durch Pharmakotherapie

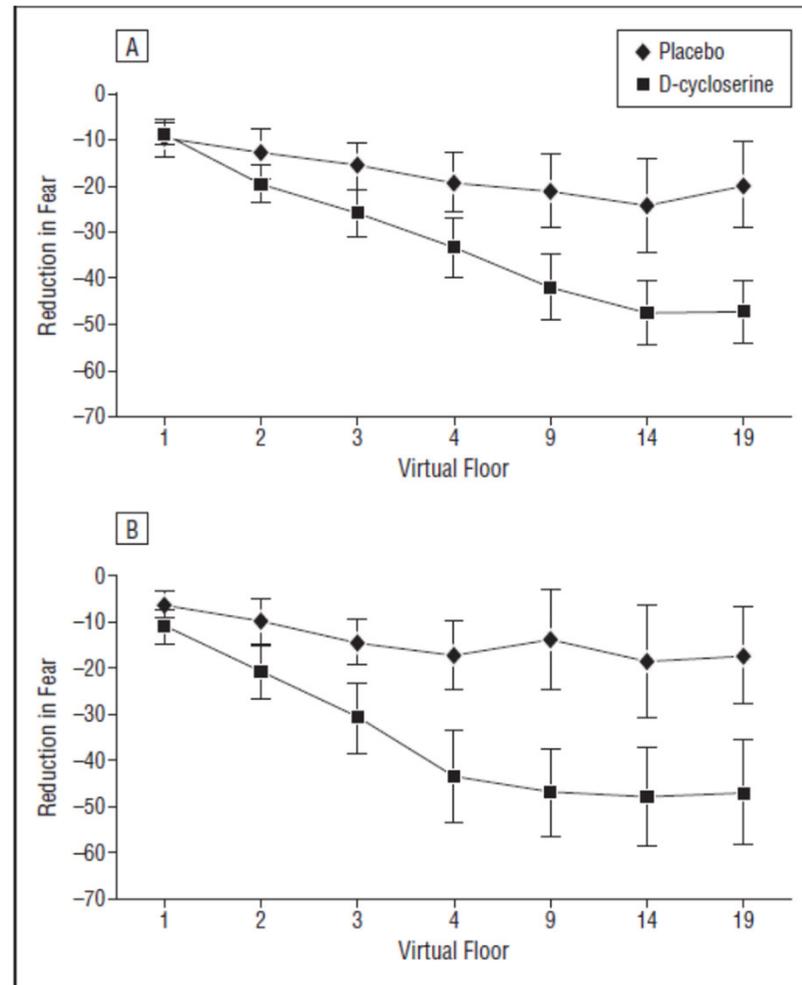


ORIGINAL ARTICLE

Cognitive Enhancers as Adjuncts to Psychotherapy

Use of D-Cycloserine in Phobic Individuals to Facilitate Extinction of Fear

Kerry J. Ressler, MD, PhD; Barbara O. Rothbaum, PhD; Libby Tannenbaum, PhD; Page Anderson, PhD;
Ken Graap, MEd; Elana Zimand, PhD; Larry Hodges, PhD; Michael Davis, PhD



Continuing Education: Review



MDMA-Assisted Psychotherapy for Treatment of Posttraumatic Stress Disorder: A Systematic Review With Meta-Analysis

The Journal of Clinical Pharmacology
2022, 62(4) 463–471
© 2021, The American College of
Clinical Pharmacology
DOI: 10.1002/jcph.1995

Kimberly W. Smith, PharmD¹, Dakota J. Sicignano¹, Adrian V. Hernandez, MD, PhD^{1,2,3} , and C. Michael White, PharmD, FCP, FCCP^{1,2} 

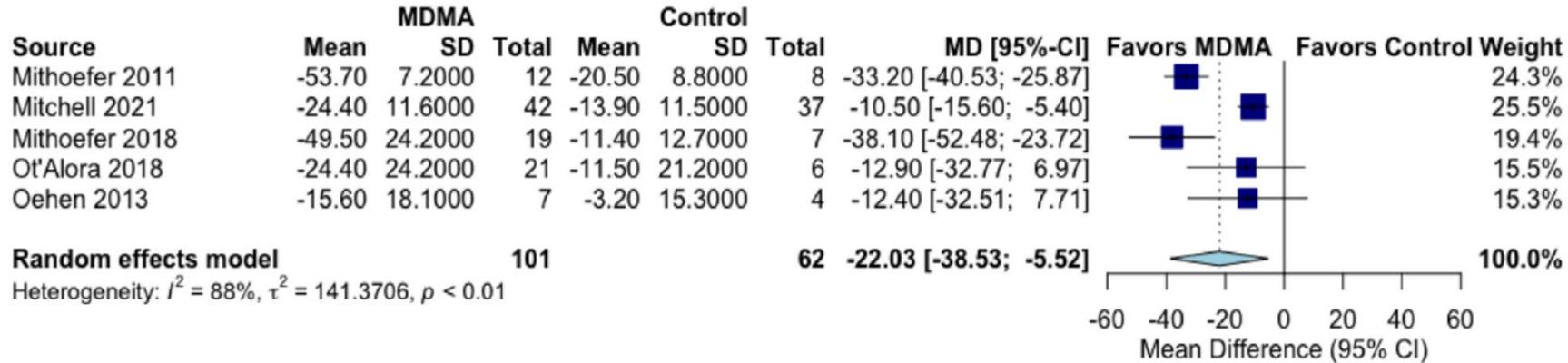
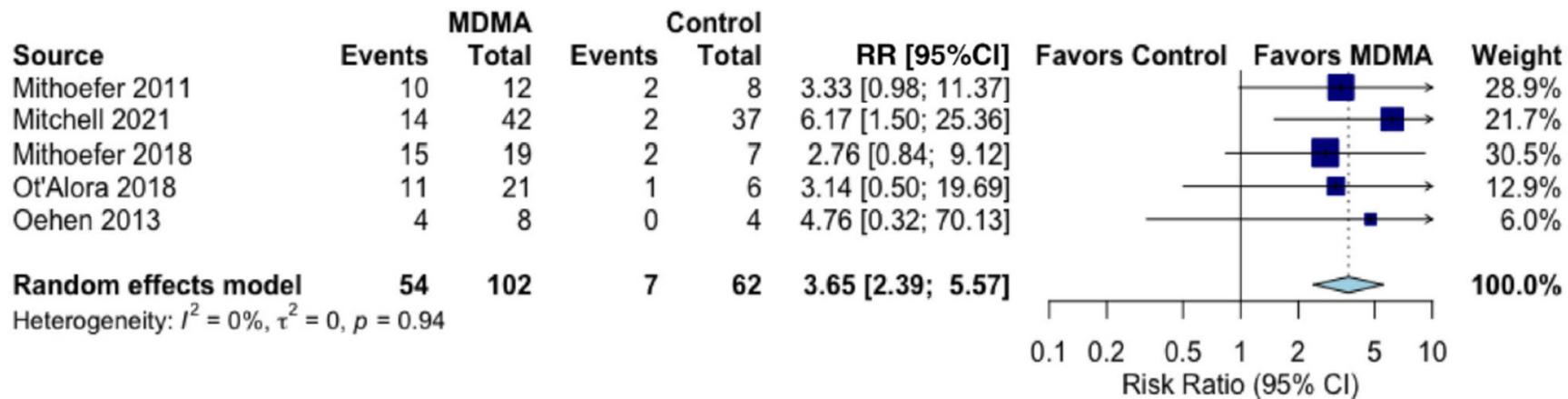


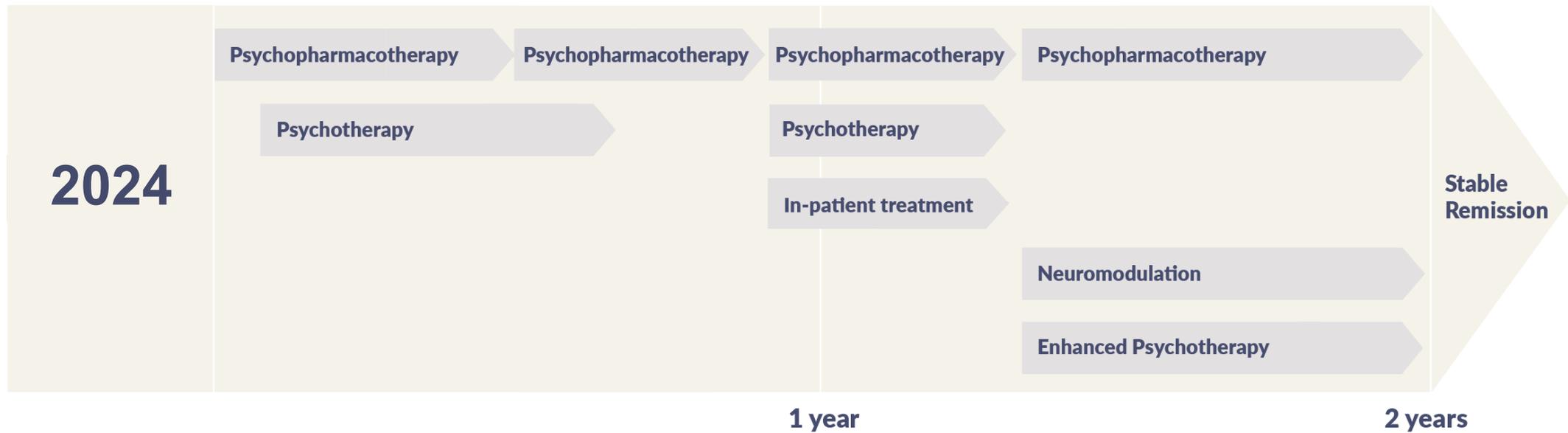
Figure 2. Pooled comparison of differences of CAPS scores from baseline for MDMA-assisted psychotherapy versus control. CAPS, Clinician-Administered PTSD Scale; MD, mean difference; MDMA, 3,4-methylenedioxymethamphetamine.



Psychotherapeutisch-psychiatrische Behandlung der Zukunft

Aktueller Ansatz

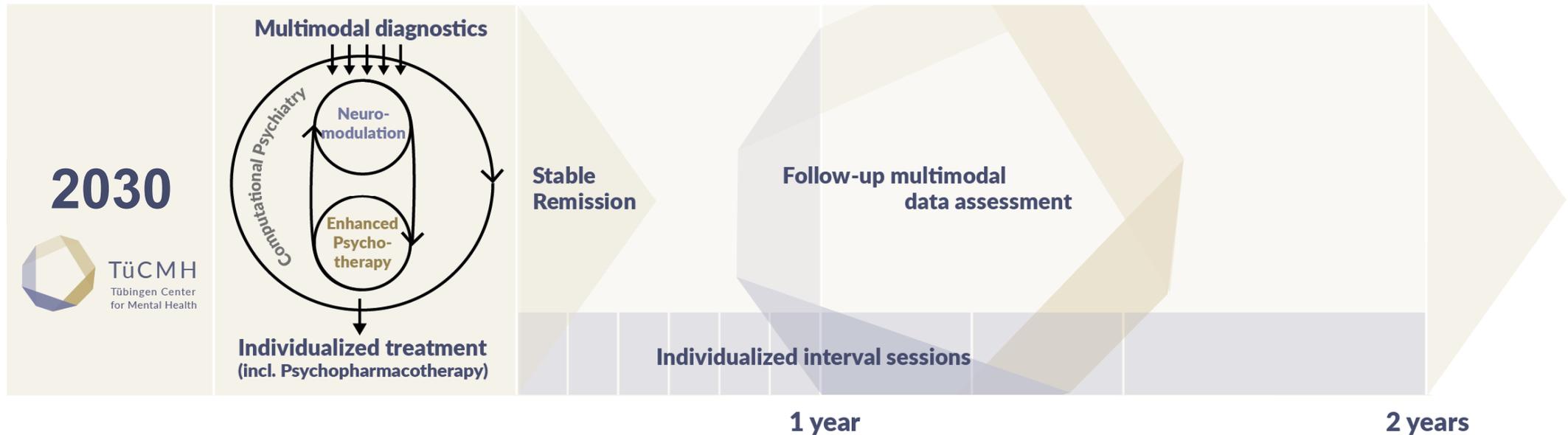
Expertise-informed "Trial and error" treatment



Psychotherapeutisch-psychiatrische Behandlung der Zukunft?

Anvisierter Ansatz

Psychobiology- and expertise-informed individualized treatment & mental health promotion



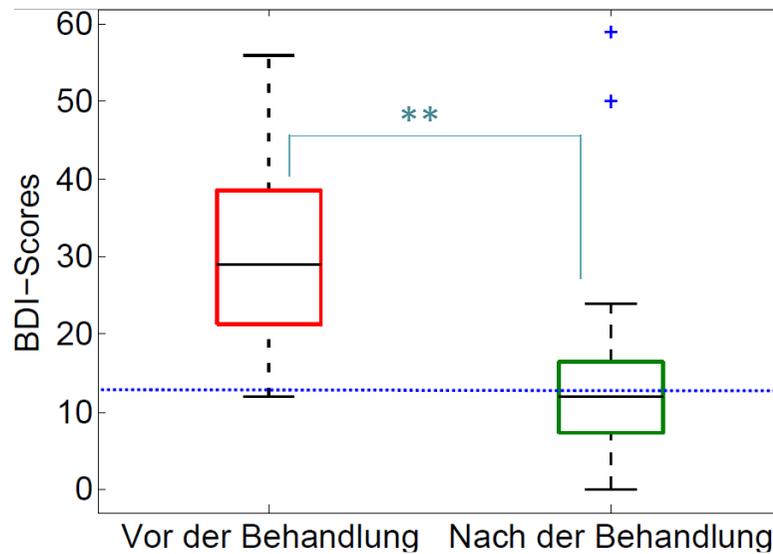
Zwischenlösung bis dahin: Kombinationsbehandlungen

Im stationären Setting gleichzeitiges Angebot von:

- Optimierung der Psychotherapie: z.B. 3. Welle ACT, CBASP, IPT, DBT, Schema, TP
- Optimierung der Pharmakotherapie (Trizyklika, Lithiumaugmentation, Ketamin)
- Bearbeitung psychosozialer Probleme (Soziotherapie)
- Ergänzung durch biologische Verfahren: Neurostimulation, Wachtherapie, Lichttherapie
- Ko-Therapien: Musik, Ergo, Bewegung, Tanz, Hunde, Garten, Cafe Hölderlin
- Milieutherapeutischer Beitrag der Station

Was bringt's? Eigene Depressions-Behandlungen Station 14

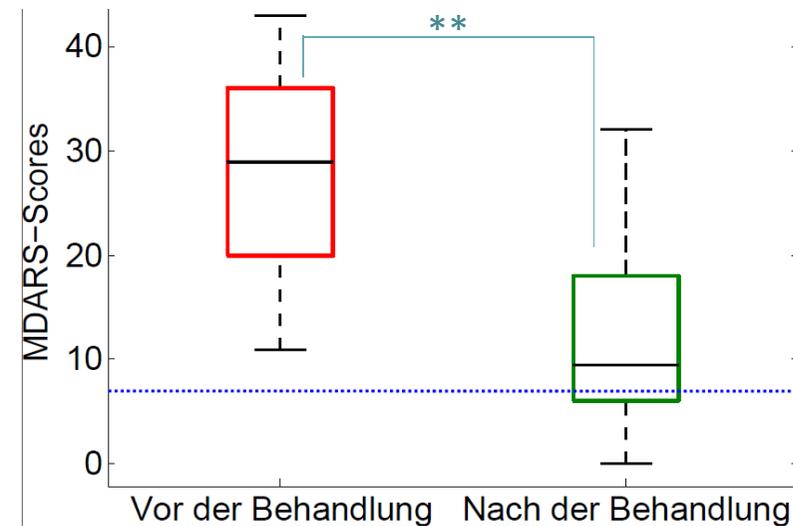
Selbsteinschätzung – BDI-2



..... Grenze zur klinischen Auffälligkeit

Effekt-Stärke:
 $r = 0.87$

Fremdeinschätzung - MADRS



Effekt-Stärke:
 $r = 0.89$



TüCMH
Tübingen Center
for Mental Health



Deutsches Zentrum für
Psychische Gesundheit



Series

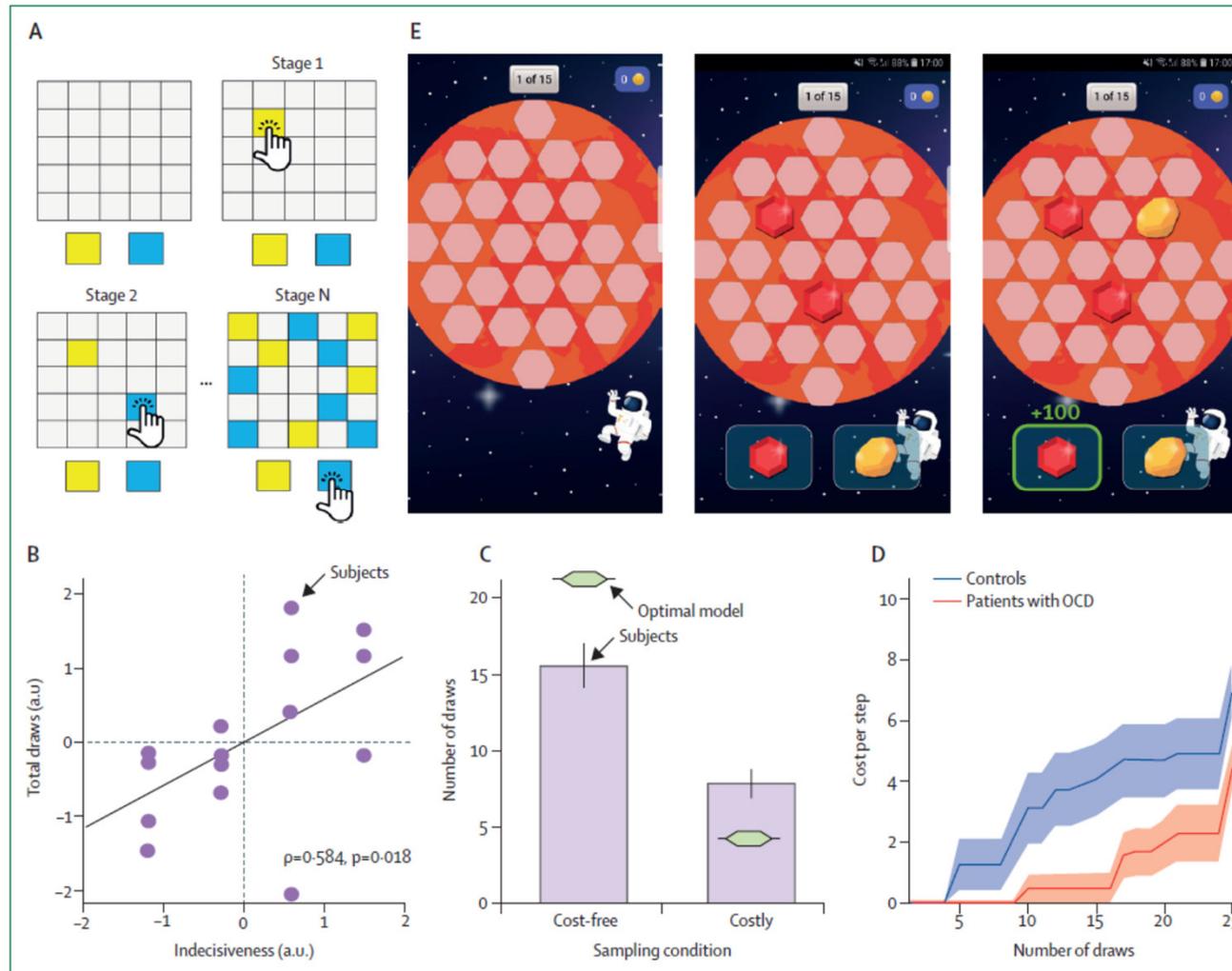


The Digital Mind: New Concepts in Mental Health 1

The promise of a model-based psychiatry: building computational models of mental ill health

Tobias U Hauser, Vasilisa Skvortsova, Munmun De Choudhury, Nikolaos Koutsouleris





Journal of Anxiety Disorders 83 (2021) 102451



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Journal of Anxiety Disorders

journal homepage: www.elsevier.com/locate/janxdis



360° Video virtual reality exposure therapy for public speaking anxiety: A randomized controlled trial[☆]



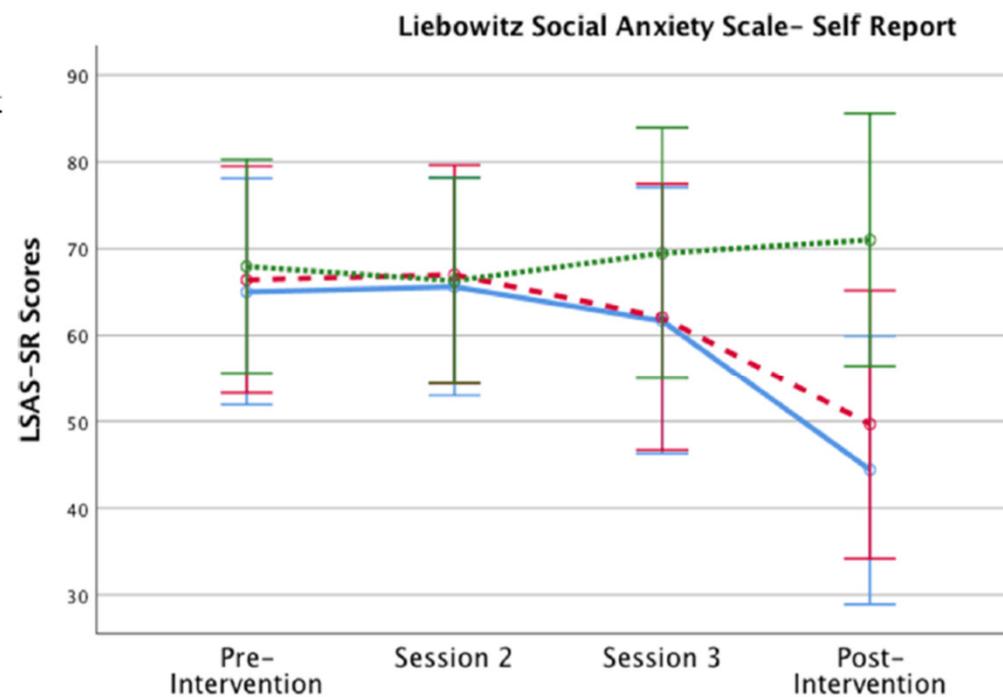
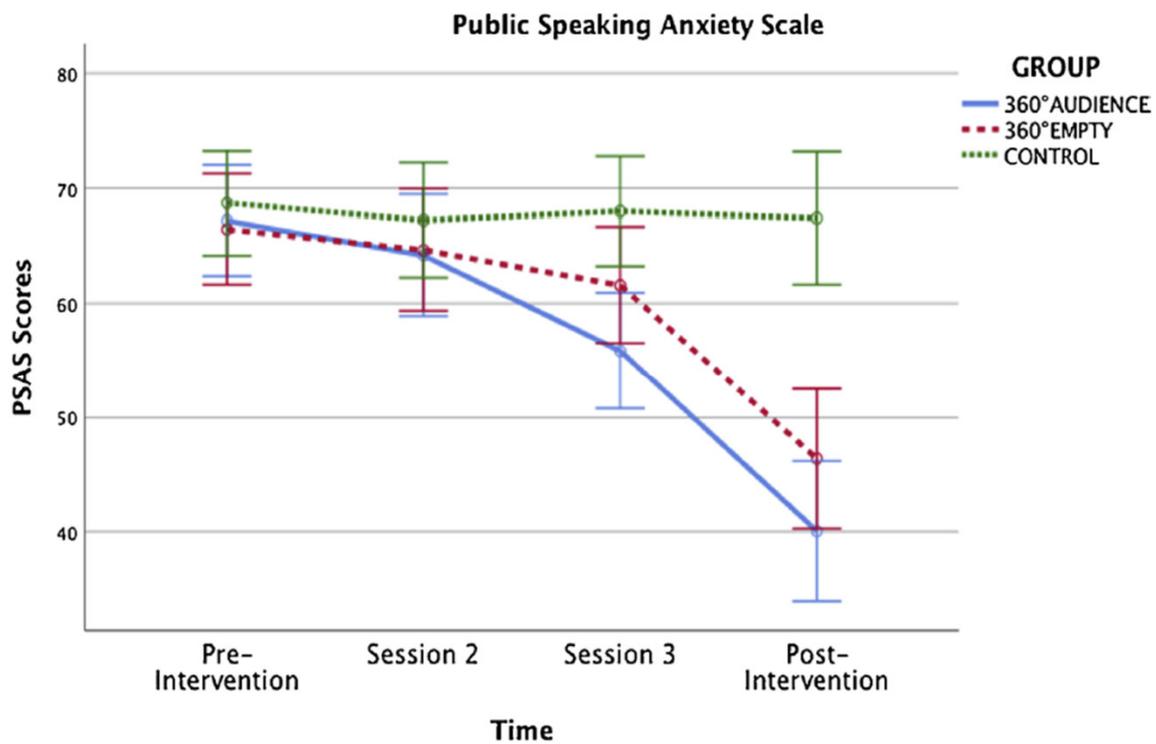
Rachel Reeves^a, Adam Elliott^b, David Curran^a, Kevin Dyer^b, Donncha Hanna^{a,*}

^a *Queens University Belfast, United Kingdom*

^b *Northern Health and Social Care Trust, United Kingdom*

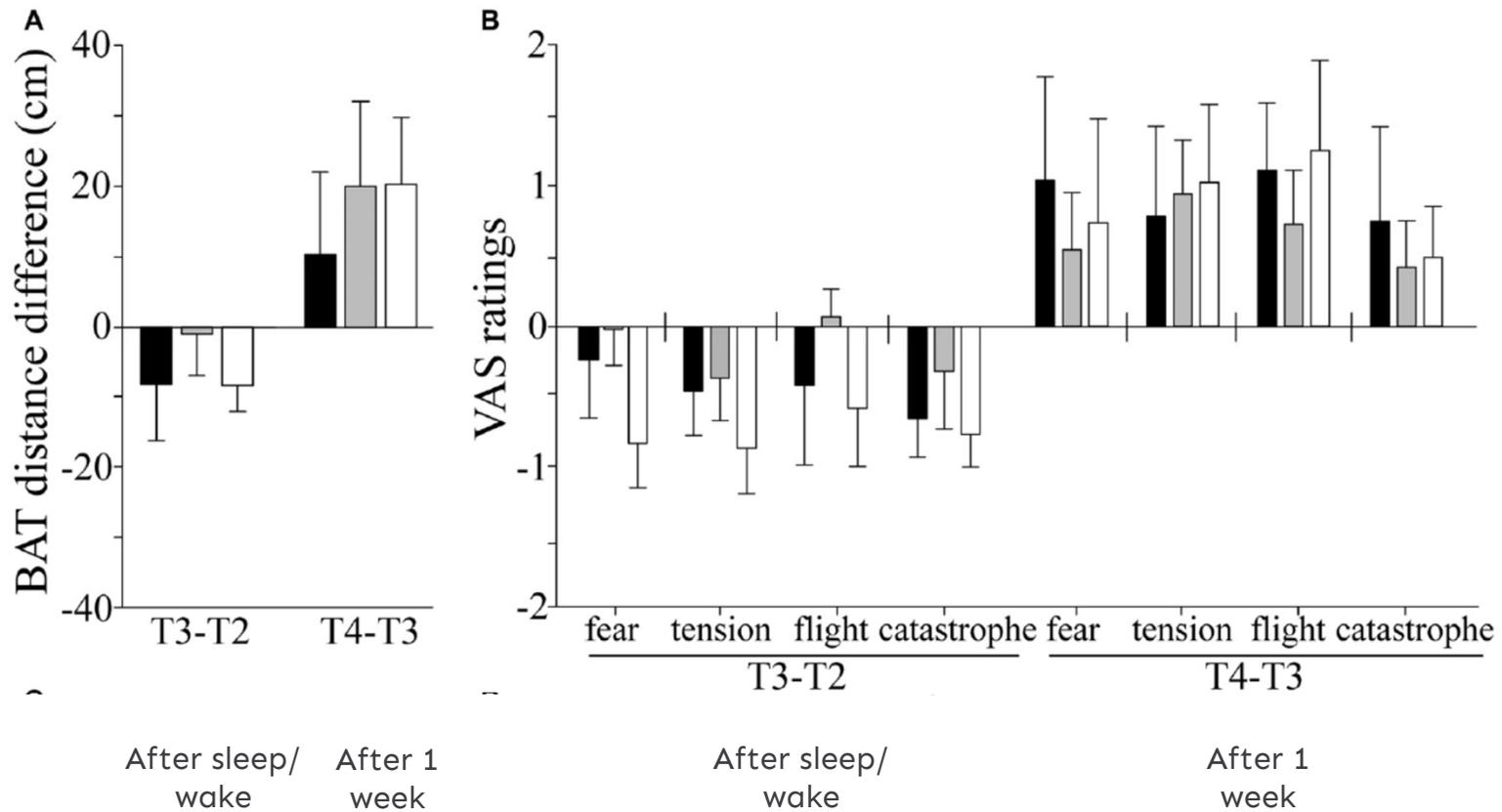
Virtual Reality bei Angst

Reeves et al. (2021)



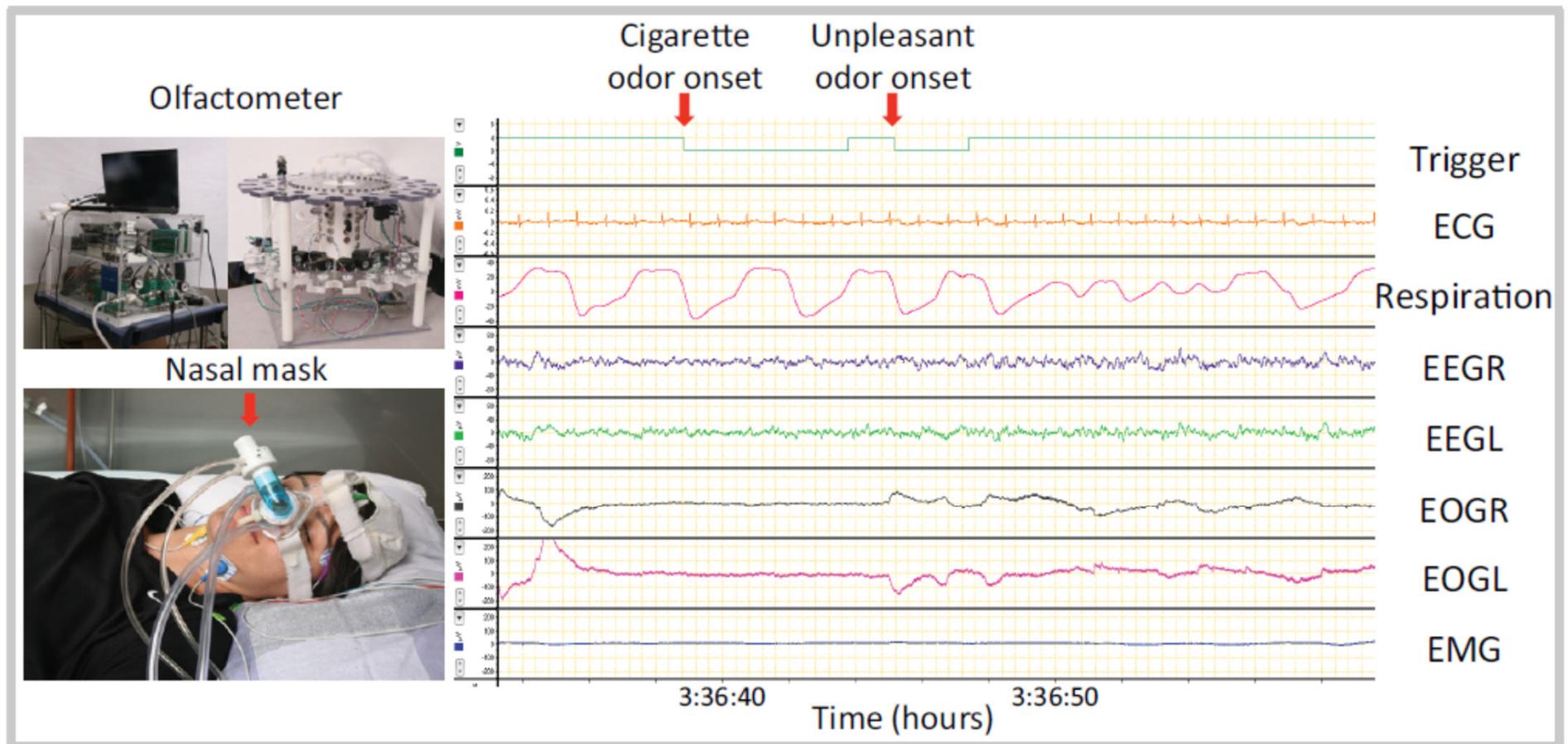
Cueing exposure therapy during sleep

Rihm et al. (2016)



Aversive odor conditioning during sleep and smoking

Arzi et al. (2014)



Expositionsbehandlung bei Spinnenphobie

Rosenbaum et al. (2020)

