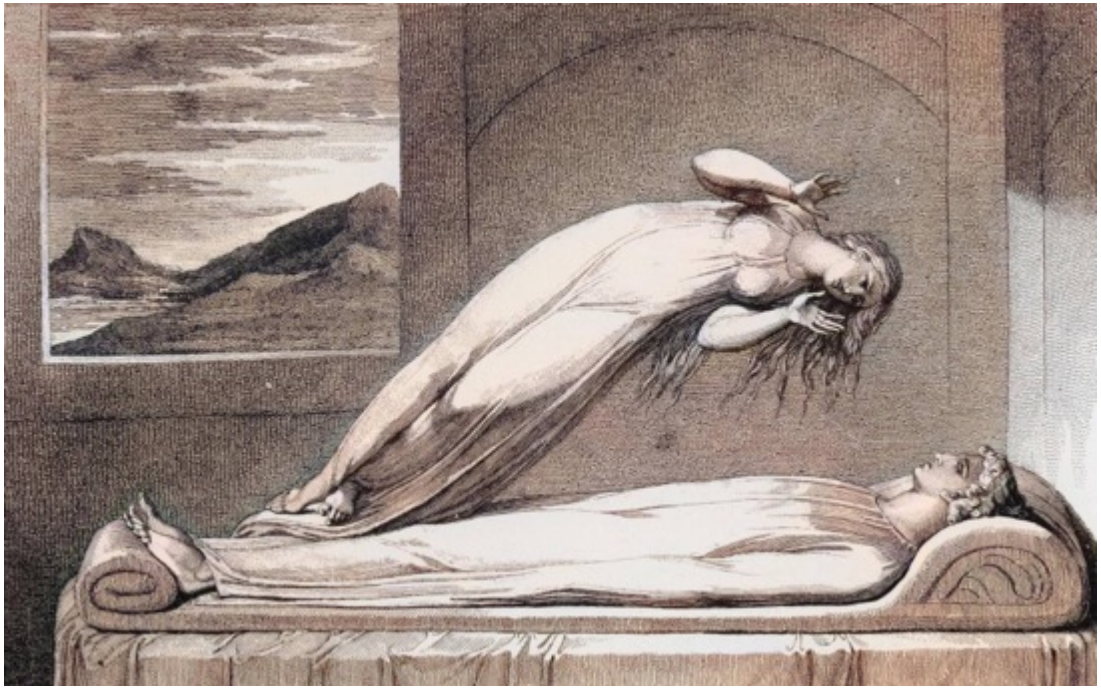


Was verbindet Körper und Geist?

Symposium Embodiment und Virtualisierung in der Kunsttherapie
03.11.2023, Bern

Dr. Prisca Bauer, M.D., Ph.D.

Klinik für Psychosomatische Medizin und Psychotherapie

Universitätsklinikum Freiburg

The soul leaving the body, 1808. Credit: Chroma Collection / Alamy Stock Photo.

Ziele

Entwicklungen der letzten Jahre in Philosophie und Forschung diskutieren die die wichtige Rolle des Körpers in der Psychotherapie und Kunsttherapie aufzeigen

- Philosophie/Theorie

- Leiblichkeit

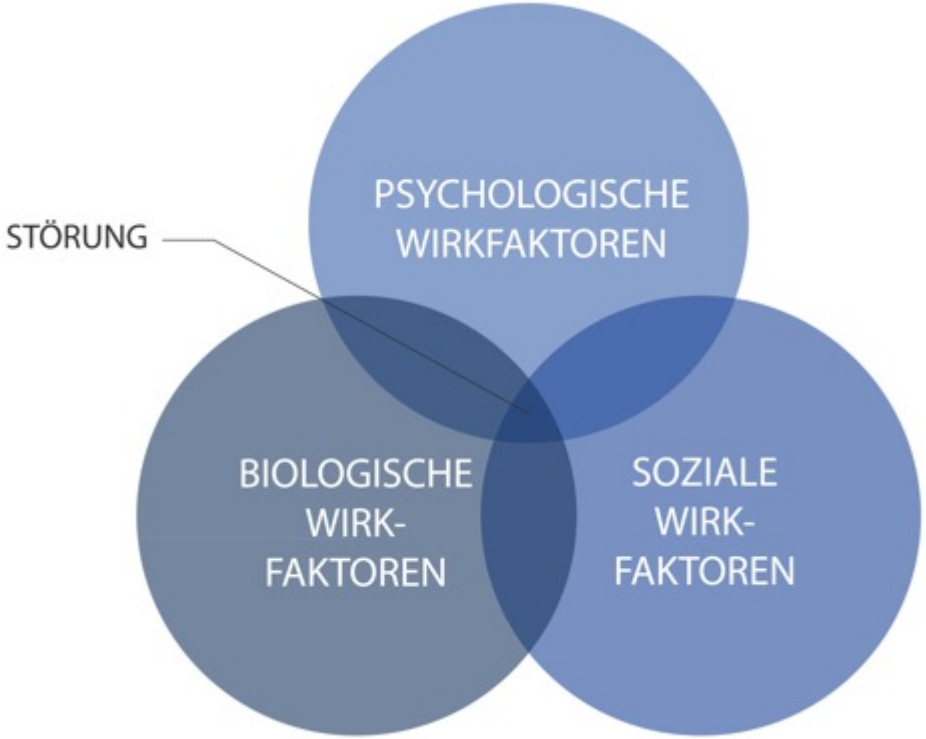
- Zwischenleiblichkeit

Modelle des Menschen

Descartes: Dualismus

Bio-medizinisch: Monistisch

Engel: das biopsychosoziale Modell



Engel G. The need for a new medical model: A challenge for biomedicine. Science 1977; 196: 129–136 doi: 10.1126/ science.847460

Embodiment (Leiblichkeit)

Major Embodiment Approaches (Overview)

Philosophy	Merleau-Ponty, 1962 Hurley, 1998	Perception is grounded in the body Unity of perception and action
Anthropology	Lock & Scheper-Huges, 1987 Csordas, 1988, 2002	The phenomenal body Culture is grounded in the body
Linguistics	Lakoff & Johnson, 1999	Concepts are grounded in the body Language/metaphor is grounded in the body Unity of perception and conception
Neurosciences	Gallese, 2003	Embodied Cognition/Simulation
Artificial Intelligence	Clark, 1997	Intellect/being is grounded in the body
Psychology Social Psychology	Varela, Thompson & Rosch, 1991 Barsalou, Niedenthal et al., 2003 Niedenthal et al., 2005	The embodied mind Cognition is grounded in the body Attitudes/emotions are grounded in the body
Memory Research	Glenberg, 1997	Memory is grounded in the body
Developmental Psych.	Thelen, 1995; 2000	Development is grounded in the body Primacy of Motion

Koch 2015 Interdisciplinary Embodiment Approaches (chapter)

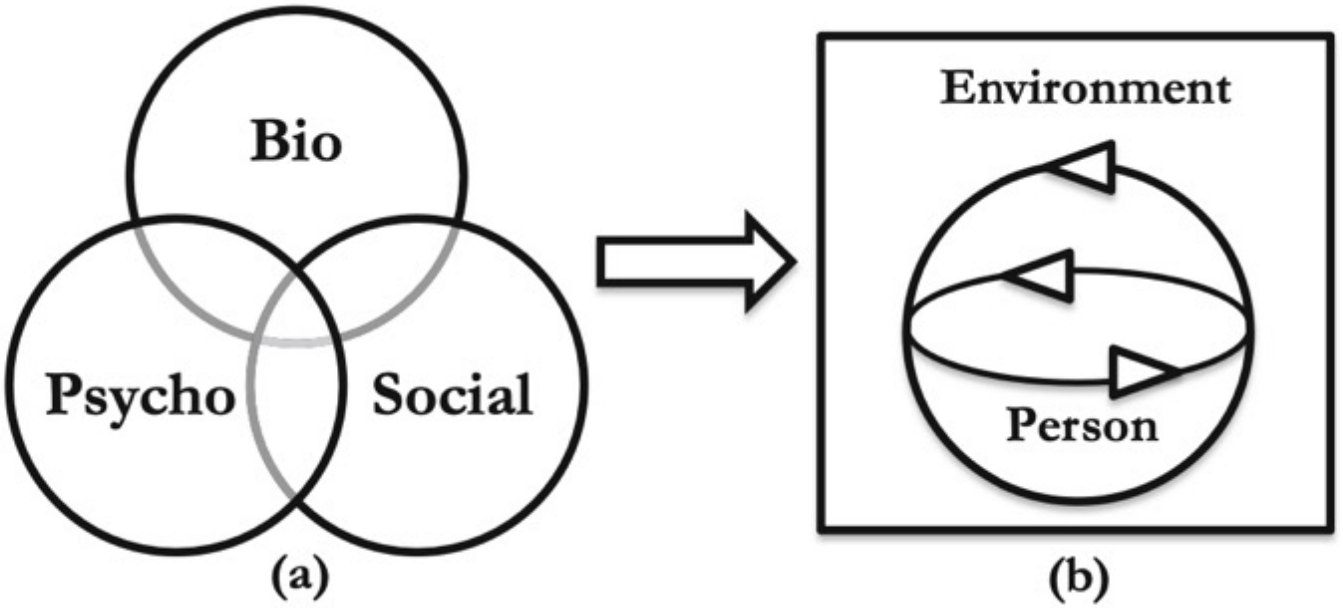
Francisco Varela: Enaktivismus

Francisco Varela (1946 – 2001)

Die inhärente und zirkuläre oder kreisförmige Beziehung zwischen
dem Geist (Kognition, Emotion),
dem Körper (motorisches Verhalten, nonverbaler Ausdruck,
physiologische Prozesse)
und der Umwelt

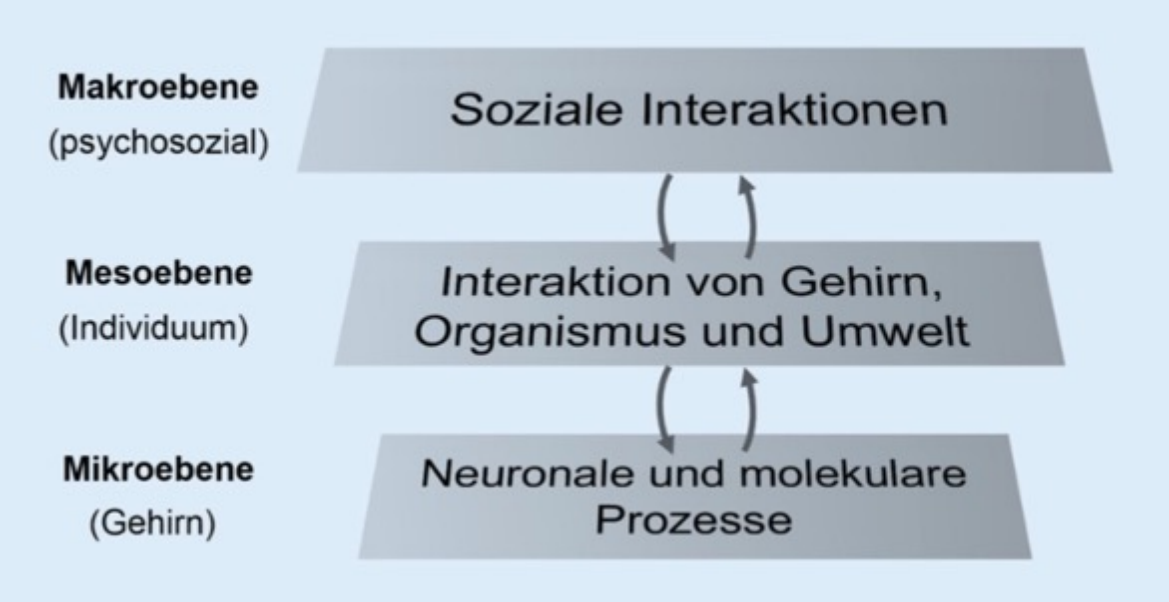
Varela FJ, Rosch E, Thompson E. The Embodied Mind. Cognitive Science and Human Experience. Cambridge: MIT Press; 1992

Vom BPS zum Enaktivismus



Stilwell, P. & Harman, K. *Int. J. Qual. Methods* **20,** 1–15 (2021). 10.1177/1609406921995299.

Weiterentwicklung: 4E Kognition



Extended

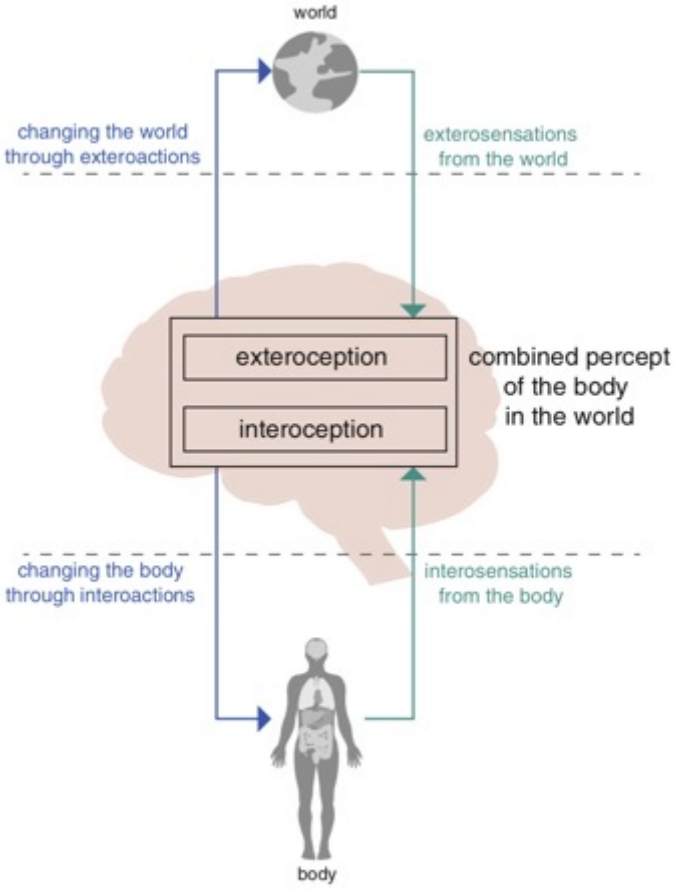
Embedded

Enacted

Embodied

Fuchs 2017 Der Nervenarzt ; Menary R. Phenomenol Cogn Sci 2010; 9: 459–463 doi: 10.1007/ s11097-010-9187-6
Newen A, De Bruin L, Gallagher S. The Oxford Handbook of 4E Cognition. Oxford: Oxford University Press; 2018

Thomas Fuchs: das Gehirn als Umweltorgan



Feedback loops/
“Zirkuläre Kausalität”

Petzschner, F. H., et al. *Biol. Psychiatry* **82,** 421–430 (2017). 10.1016/j.biopsych.2017.05.012.

Was bedeutet das?

- Embodiment/leiblichkeit: Der Körper ist in Kognition, Verhalten und Erfahrung involviert

- Enaktivismus: Menschliche Kognition ist Handlungsorietiert- wir denken mit und durch unsere körperliche Interaktion mit der Welt

"Ago ergo cogito – I act, therefore I think" (Glenberg, 2005)

- Wahrnehmung ist kein passiver Prozess, sondern eng verbunden mit und geleitet durch Aktion
  - Aktion-Wahrnehmung ist zentral für wie wir uns selbst und die Welt spüren

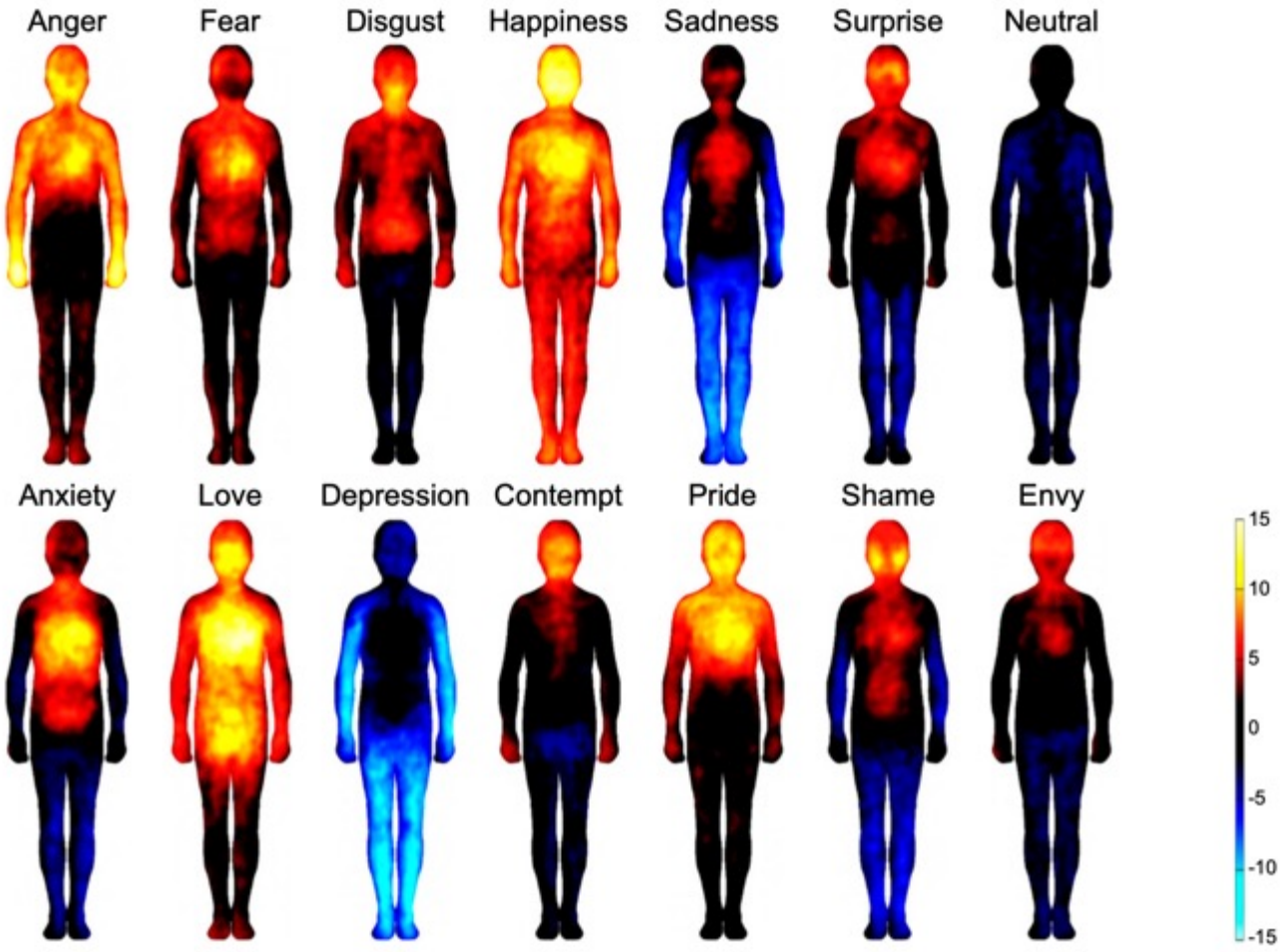
- Kognitive Prozesse sind keine Representationen oder abstrakte Berechnungen in unserem Gehirn.
- Neurale Netzwerke funktionieren in dem sie in einem Körper eingebettet sind der sich wiederum in spezifische soziale und kulturelle Kontexte bewegt (Bedeutung der Umwelt)

Öko-soziale Perspektive

- Entwicklung, individuelle Variation, Lernen, Erfahrung
- Biografie, Lebensereignisse, Übergänge
- Selbstverständnis, Identität
- Sozio-kulturell: Vulnerabilität, Präkarität, Stigma, Rassismus, Diskrimination aber auch Ressourcen, Resilienz.
- Kulturell-Historisch: Verständnis von Werte, Umgang mit Krankheit, Hilfe suchen, Erwartungen und Ansprechen auf Interventionen

Ana Gómez-Carrillo et al., Lancet Psychiatry. 2023; 10(4):296-304. doi: 10.1016/S2215-0366(23)00006-8.

Empirische Forschung



Nummenmaa L et al. Proc Natl Acad Sci USA 2014; 111: 646–651 doi: 10.1073/pnas.1321664111
https://version.aalto.fi/ gitlab/eglerean/embody

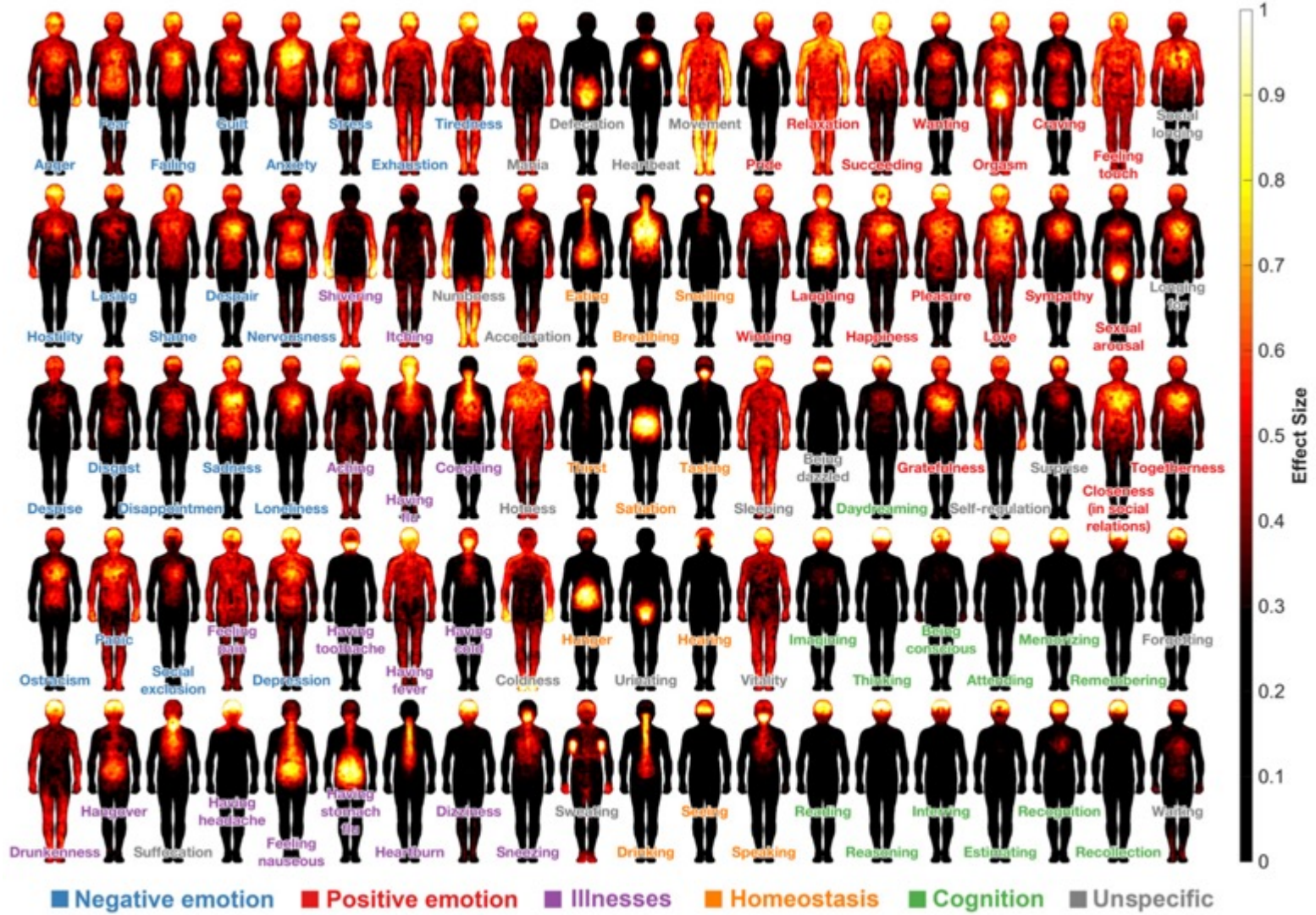


Fig. 3. Bodily feeling maps. Pixel intensities show regions where each feeling was associated with statistically significant ($P < 0.05$, FDR corrected) bodily sensations. The data are arranged into the matrix approximately as in Fig. 2; clustering is per Experiment 2. Colorbar indicates the effect size. See *SI Appendix*, Figs. S4 and S5 for spatial arrangement per t-SNE.

Nummenmaa L et al. Proc Natl Acad Sci USA 2018; 115:9198-9203 doi/10.1073/pnas.1807390115

Verkörperte Oszillationen

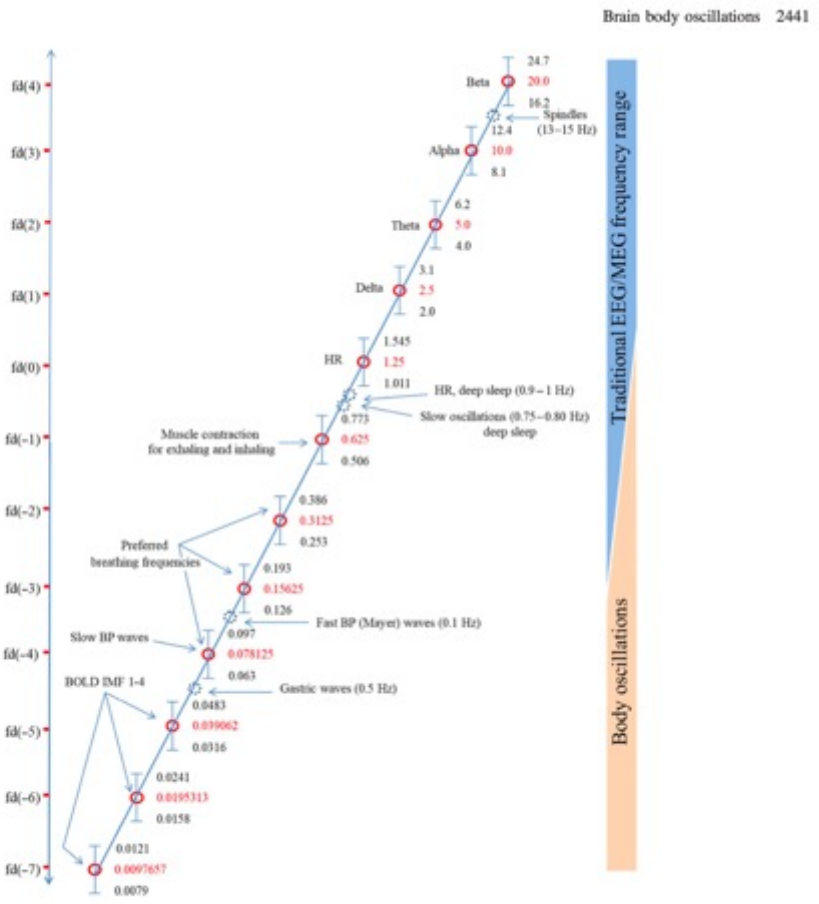


FIG. 5. Illustration of frequency domains that are predicted by the binary hierarchy brain body oscillation theory (red circles), shown as linear function (on a log(2) scale) of frequency in Hz (y-axis). Frequency bands, calculated according to the 'golden mean rule' (see text) are depicted as vertical bars (bandwidths relative to the y-axis are not to scale). Frequencies, lying outside the predicted bands are represented as dashed blue circles and are considered falling outside the binary hierarchy. Note that dominant brain and body oscillations that emerge in deep sleep are not members of the binary hierarchy. This suggests decoupling from frequencies that dominate in the conscious, awake state.

Klimesch, European Journal of Neuroscience, Vol. 48, pp. 2431–2453, 2018

Leiblichkeit der Depression

Table 2. GBM and depression severity

	N	*R*	*p* value
BDI-II			
GBM and depression severity (total score)	41	−0.34	0.03*
Controlled for antidepressive medication and age	41	−0.39	0.02*
Without restlessness[1]	39	−0.36	0.02*
GBM and restlessness	39	0.06	0.71
HAMD			
GBM and depression severity (total score)	41	−0.38	0.02*
Controlled for antidepressive medication and age	41	−0.39	0.02*
Without psychomotor retardation and agitation[1]	41	−0.40	0.02*
GBM and psychomotor retardation	41	−0.24	0.13
GBM and psychomotor agitation	41	0.16	0.34

GBM, gross body movement; BDI-II, Beck Depression Inventory-II; HAMD, Hamilton Depression Rating Scale. [1] Correlations between GBM and depression severity scales without the respective items assessing psychomotor symptoms. * $p < 0.05$, two-tailed.

UNIVERSITÄTS KLINIKUM FREIBURG

Sandmeir, A., (2021). *Depression Severity Is Related to Less Gross Body Movement: A Motion Energy Analysis. Psychopathology, 54(2), 106–112.* doi:10.1159/000512959

Zwischenleiblichkeit: Synchronie / Resonanz

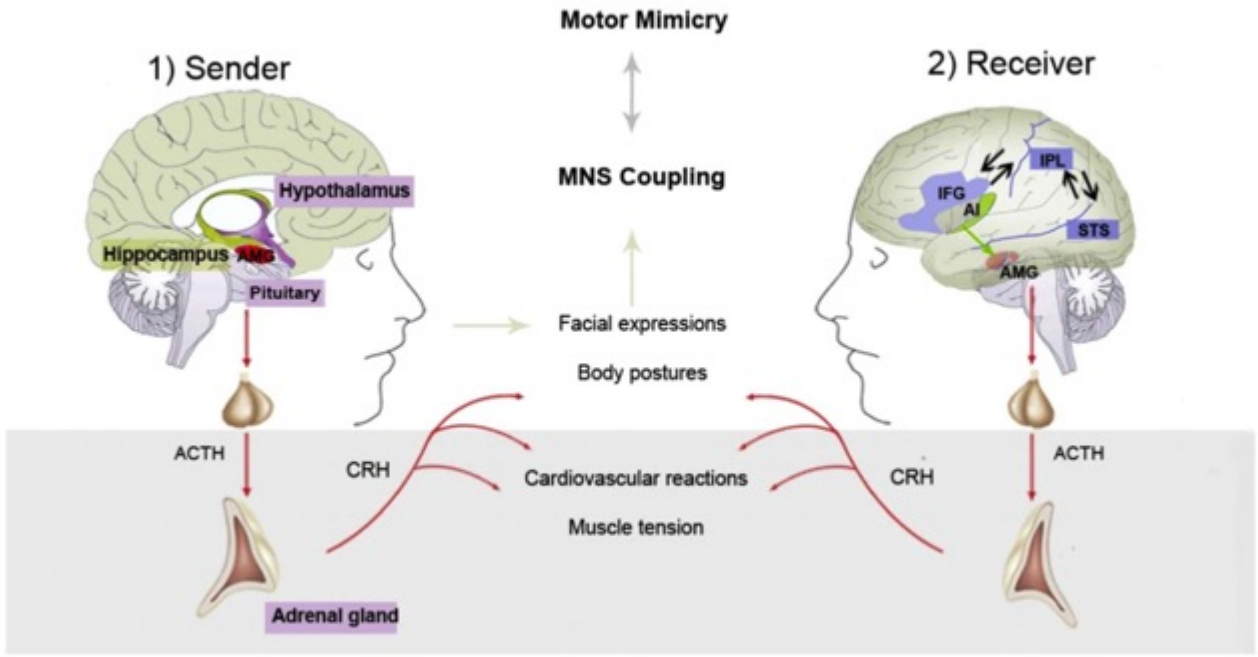


Fig. 4. Motor mimicry (1) Observation of bodily movements activates the STS which is involved in early visual description of actions. (2) The STS projects to the IPL with *mirror* neurons tracking precise kinaesthetic movements and (3) passes this information to the IFG coding for 'the goal of the action'. (4) The goal directed motor plans are sent from the IFG via the IPL back to the STS. (5) The MNS coupling initiates motor mimicry. The anterior insula AI (green) connects MNS with AMG and provides a possible neurological crossroad between these two independent, yet mutually interacting systems. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Autonomes Nervensystem

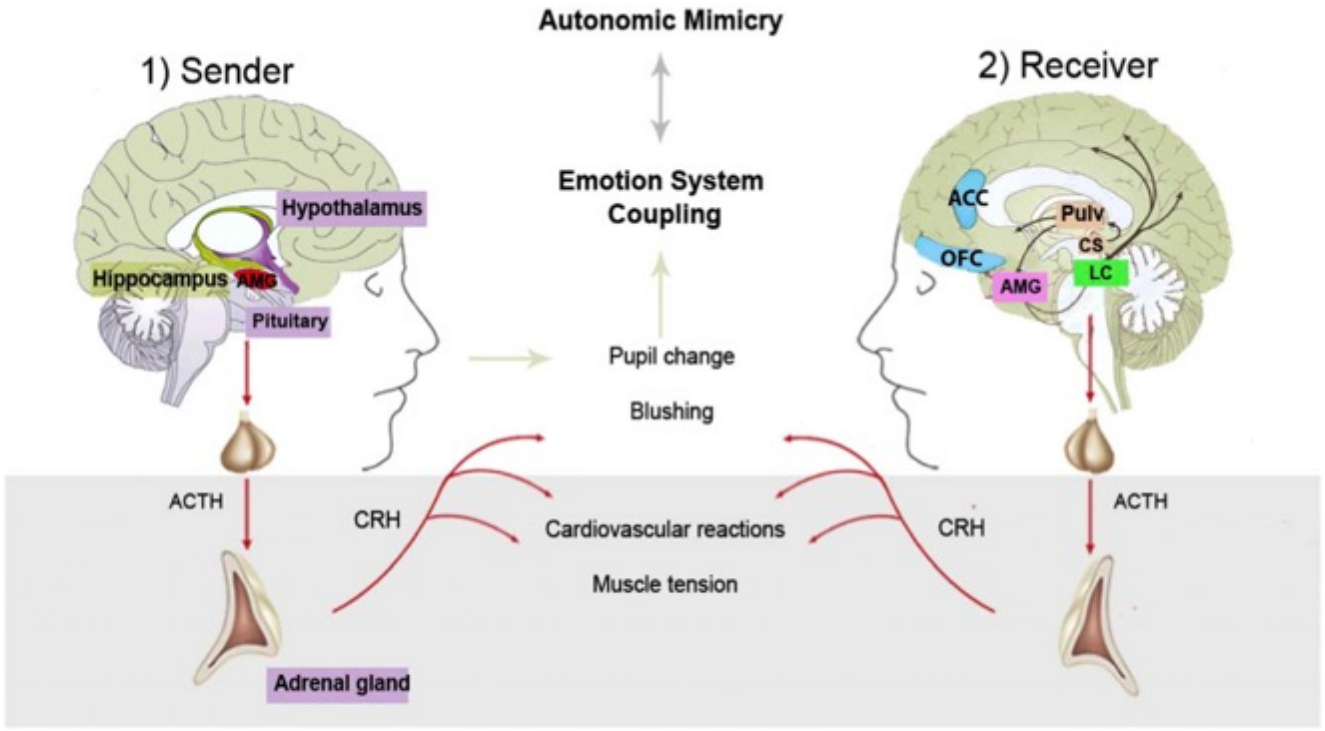


Fig. 3. Neurological Mechanisms of Autonomic Mimicry. **Sender:** (1) Sender's stress response is initiated by hypothalamus-pituitary-adrenal axis activation. (2) Adrenal gland secretes ACTH increasing the level of CRH in the bloodstream. (3) The neuroendocronological reactions are accompanied by cardiovascular changes, muscle tension, pupil dilation, blushing, and sweating. **Receiver:** (4) The affective information is implicitly registered by receivers' senses and passes through (5) the CS-Pulv pathway to the AMG. (6) The AMG and LC activate the HPA. (7) AMG and LC project to higher cortical networks such as OFC, ACC and VMPFC influencing social decisions. (8) Sender and receiver emotionally converge on *physiological* (gray) and *cognitive* (white) levels.

Soziale Interaktionen

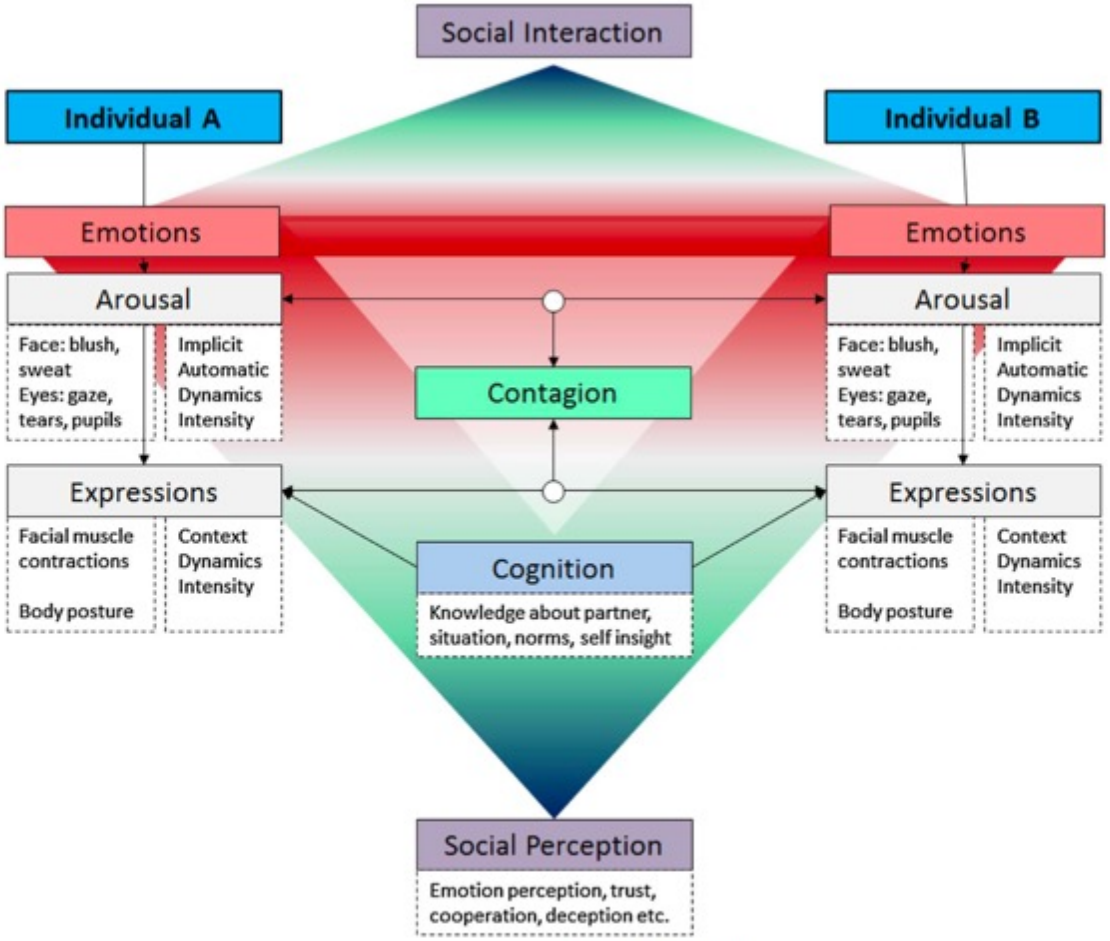
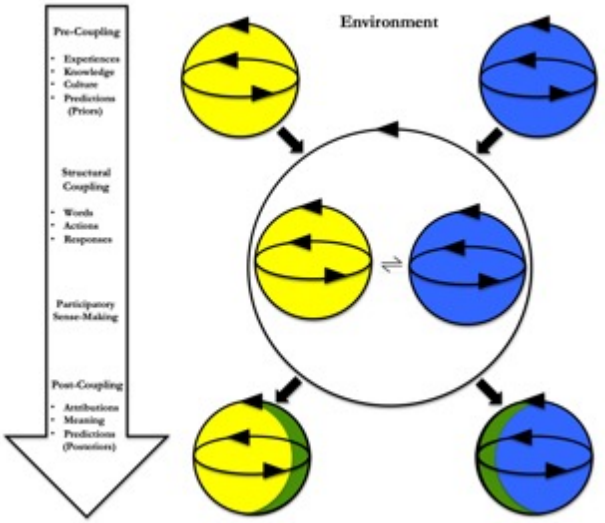


Fig. 2. Schematic representation of emotion processing during social interactions, adapted from Fig. 1, Kret (2015) shows how *emotions* that are expressed during a social interaction by Person A, through emotional *contagion*, influence the emotions and expressions of Person B. Person A and B not only mimic each other's facial expression, they also link on the physiological level and without being aware of it, synchronize on the level of arousal.

Prochazkova & Kret, Neuroscience and Biobehavioral Reviews 80 (2017) 99–114

Wo bleibt der Körper in der Psychotherapie?

- Übertragung-Gegenübertragungsphänomene
- Explizit machen von implizite non-verbale Kommunikation => körperbasierte und kunsttherapeutische Verfahren
- **Bedeutung**



Embodiment und Synchronie erfassen

Verbal & Paraverbal

- Redefluss, Geschwindigkeit, Lautstärke
- Gemeinsame Sprache (linguistisch)
- Stille

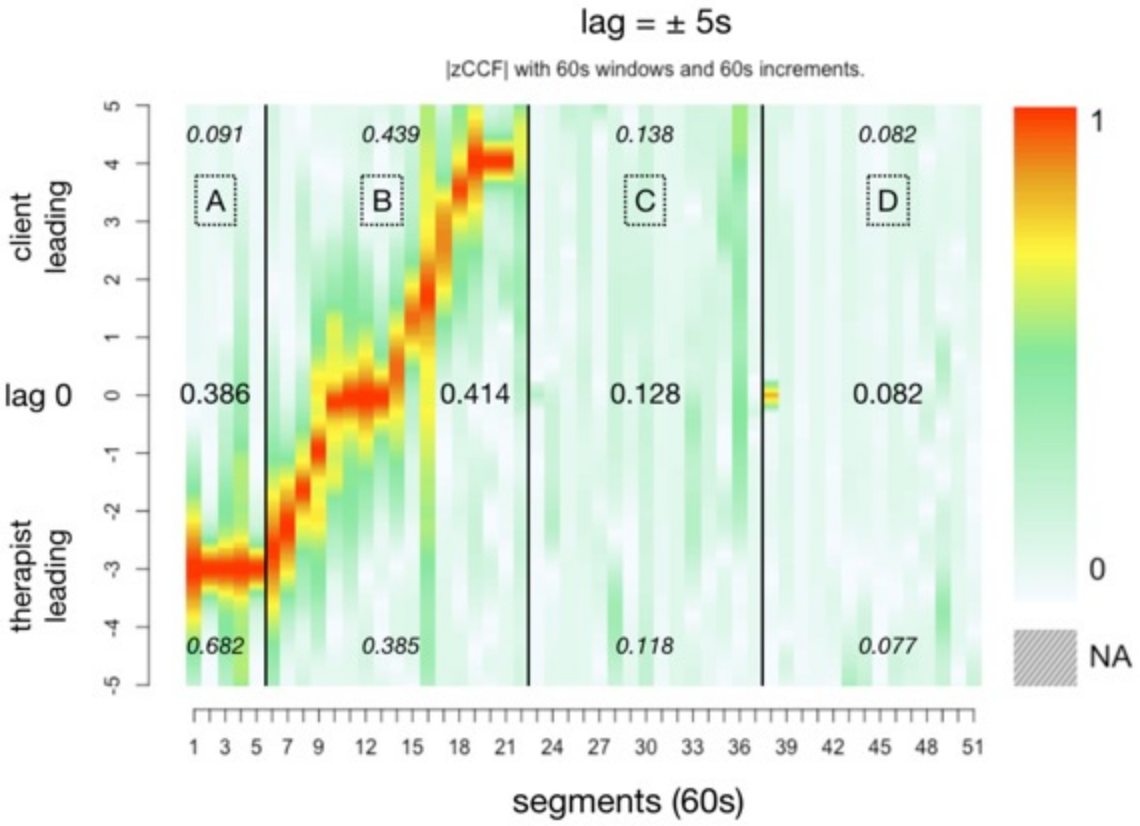
Non-verbal Physiologisch

- Herzrate / Herzratenvariabilität (EKG)
- Atmung
- Hirnwellen (EEG)
- Bewegung (Motor Energy Analysis, MEA)
- Hautleitfähigkeit

Motor Energy Analysis

Ramseyer, F. T. (2020). Motion energy analysis (MEA). *Journal of Counseling Psychology*, *67*(4), 536-549. doi:10.1037/cou0000407

Motor Energy Analysis



Ramseyer, F. T. (2020). Motion energy analysis (MEA). *Journal of Counseling Psychology*, *67*(4), 536-549. doi:10.1037/cou0000407

Empirische Belege/Forschung

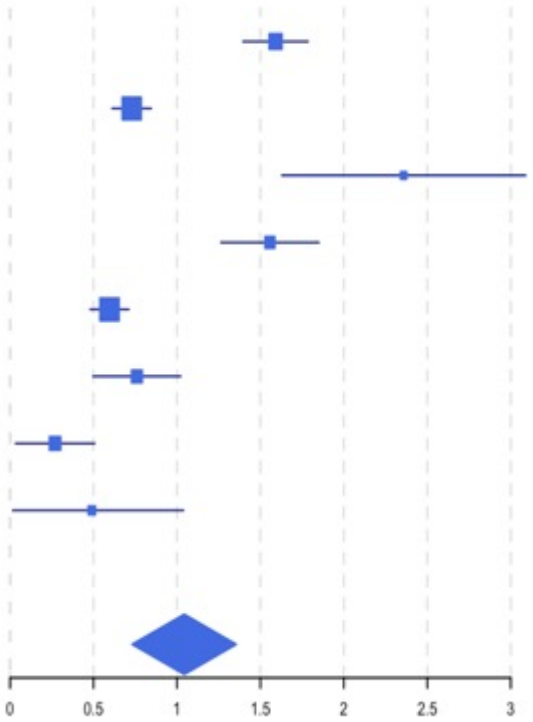
	ES_{abs}(SUSY)	ES_{noabs}(SUSY)	Concordance Index (SUCO)
Respiration	[synchrony not clearly present]	[in-phase synchrony] +Alliance_cl +Progress_th	[in-phase synchrony] +Session number +client[vreme]
Electrocardiogram	[no synchrony]	[no synchrony]	[no synchrony]
Heart rate	[synchrony]	[anti-phase synchrony] –Cooperation_th +Progress_th	[anti-phase synchrony] +Alliance_cl +Well-being_cl –Progress_cl +client[vreme]
Heart rate variability	[synchrony]	[synchrony not clearly present] + Alliance_th	[no synchrony] – Cooperation_th – client[vreme]

Notes. SUSY, surrogate synchrony method, based on absolute cross-correlation values (ES_{abs}), or based on cross-correlation values (ES_{noabs}). In square brackets, summary of hypothesis 1 "Synchrony present". SUCO, surrogate concordance method. +, significant positive association; –, significant negative association.

Tschacher & Meier, Psychotherapy Research, 2019 1-16 https://doi.org/10.1080/10503307.2019.1612114

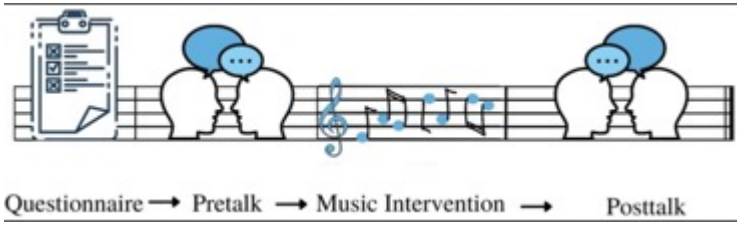
Meta-analyse Synchronie in Psychotherapie

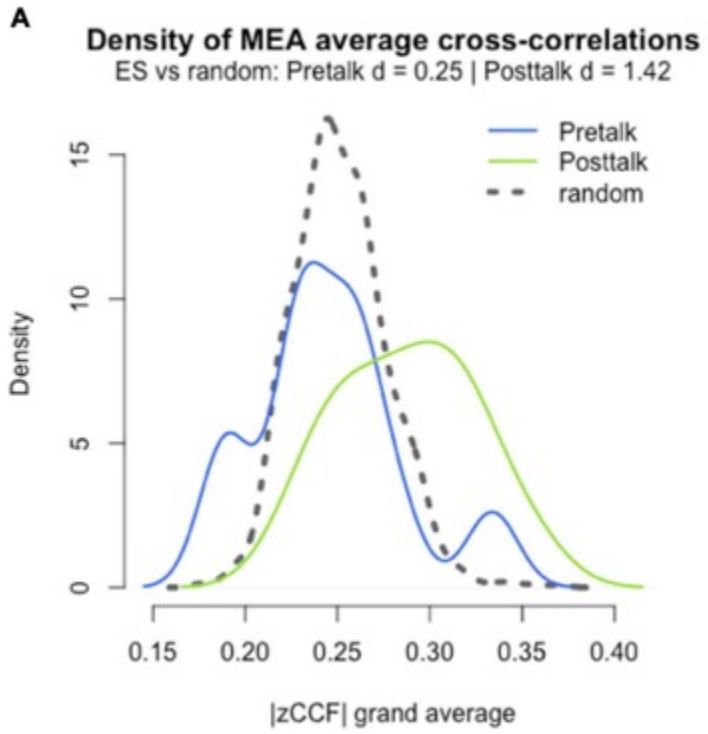
Study	Cohen's *d*	Variance
Bar-Kalifa et al, 2019	1.59	0.01
Deres-Cohen 2021	0.73	0.004
Marci 2007	2.36	0.139
Paulick 2018	1.56	0.022
Prinz 2020	0.6	0.003
Ramseyer 2020	0.76	0.018
Ramseyer et al, 2020	0.27	0.015
Ramseyer & Tschacher 2010/2011	0.49	0.078
Summary	**1.04**	**0.036**

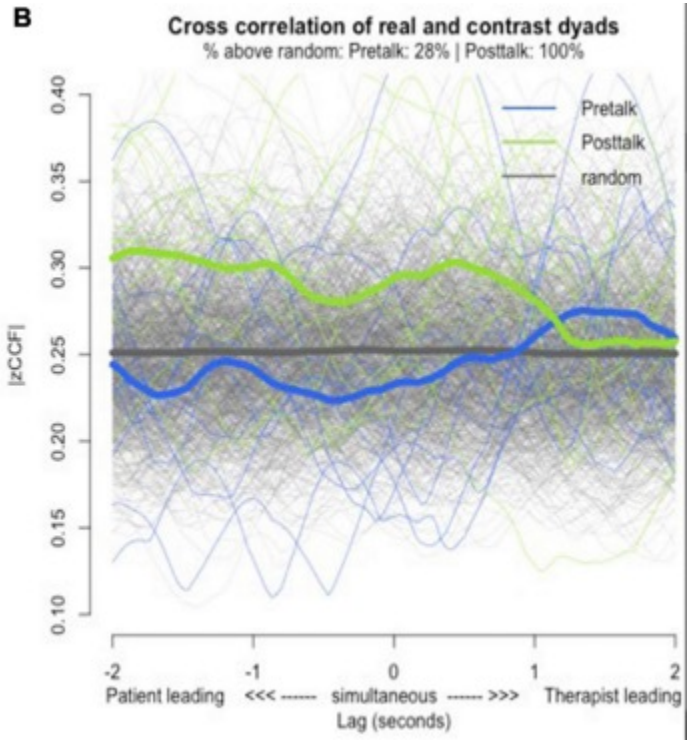


Atzil-Slonim et al., Psychother Res 2023 33(7):898-917. doi: 10.1080/10503307.2023.2191803.

Musiktherapie







Yap, Front. Hum. Neurosci., 2022, Sec. Cognitive Neuroscience Vol 16 doi.org/10.3389/fnhum.2022.912729

Anwendung auf die Praxis

- Auf eigene affektive und körperliche Zustände achten
- Den emotionalen Kontext, in dem Synchronität auftritt beachten.
  - Einige Kontexte erfordern wahrscheinlich eine hohe Synchronie (adaptive Emotionen), während andere Kontexte wahrscheinlich ein relativ niedriges Maß an Synchronie erfordern (z. B. maladaptive Emotionen).
- Flexibel in und aus der Synchronität bewegen => dynamische Bewegungen zwischen Synchronisation und Trennung wahrscheinlich adaptiv

Atzil-Slonim et al., Psychother Res 2023 33(7):898-917. doi: 10.1080/10503307.2023.2191803.

Zusammenfassung

- Körper und Geist sind eng Verbunden
- Der Körper ist in Emotion, Kognition, Wahrnehmung und Verhalten involviert
- Leibliche Prozesse spielen eine große Rolle in alle Formen der Psychotherapie (inkl. Kunsttherapie)
- Therapeuten können verkörperte Aspekte im therapeutischen Prozess nutzen

prisca.bauer@uniklinik-freiburg.de
Klinik für Psychosomatische Medizin und Psychotherapie
Universitätsklinikum Freiburg

UNIVERSITÄTS KLINIKUM FREIBURG