

Applied Research in DMT and its Perspectives

*La ricerca applicata in DMT:
realtà e prospettive*

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Ad Personam: Sabine C. Koch

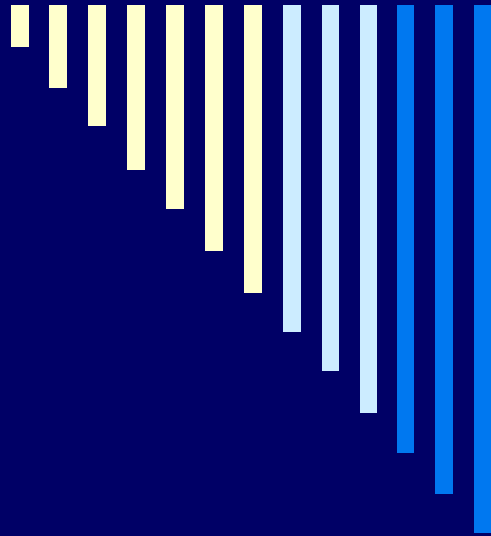
- Psychologist, Dance/Movement Therapist
 - Graduate from Hahnemann Philadelphia
 - Investigates Movement - Meaning Relation and Processes of Embodiment a.o. in
 - The national BMBF-project „body language of movement and dance“ (Koch/Müller/Fuchs)
 - The EU Marie Curie ITN „TESIS - Toward an embodied science of intersubjectivity“ Heidelberg Node (Fuchs)
-



What is this talk about?

Empirical Research needs

- Suitable theory frameworks (of Translational Science)
 - Phenomenology
 - Evidence-Based Medicine
 - Embodiment Approaches
 - Sound methods / Clever studies
 - Movement Analysis (Observation)
 - Outcome studies
 - Experiments
 - Exploratory studies
 - Open Minds
 - Critical Discussions
 - Courageous Thoughts and Conclusions
-



Suitable Frameworks

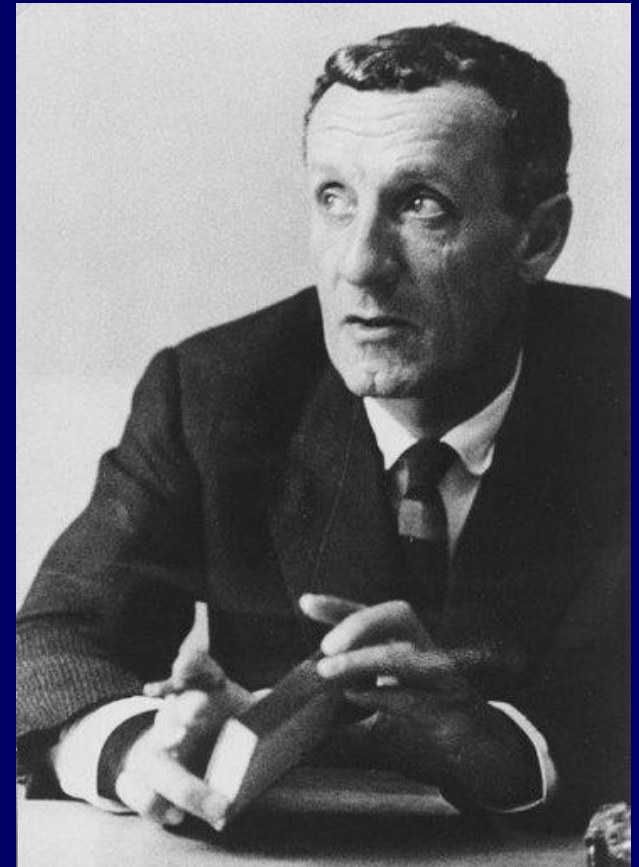




1. Phenomenology as a Framework for DMT

What light is for seeing,
body movement is for *feeling*
(Merleau-Ponty, 1966)

The infant is *thinking in move-
ment* (Sheets-Johnstone, 2011, p. 438)





2. Evidence-Based Model as a framework for DMT

- Evidence-based research has an increasingly important influence on the acknowledgement and approval of our field
 - To be written into the catalogues of clinical treatment for specific patients groups will an important basis for our future payed work
 - This depends on the available outcome reasearch, according to the following hierarchy
-



Levels of Evidence

Meta-Analyses

At least one RCT

Sound studies without
randomization

Evidence from clinical reports

Expert opinions, commissions, etc.



Embodiment: Definition

Embodiment phenomena are related to *bodily states* such as postures, arm movements, facial expressions that play a central role in *information processing*.

Barsalou, Niedenthal, et al. (2003)

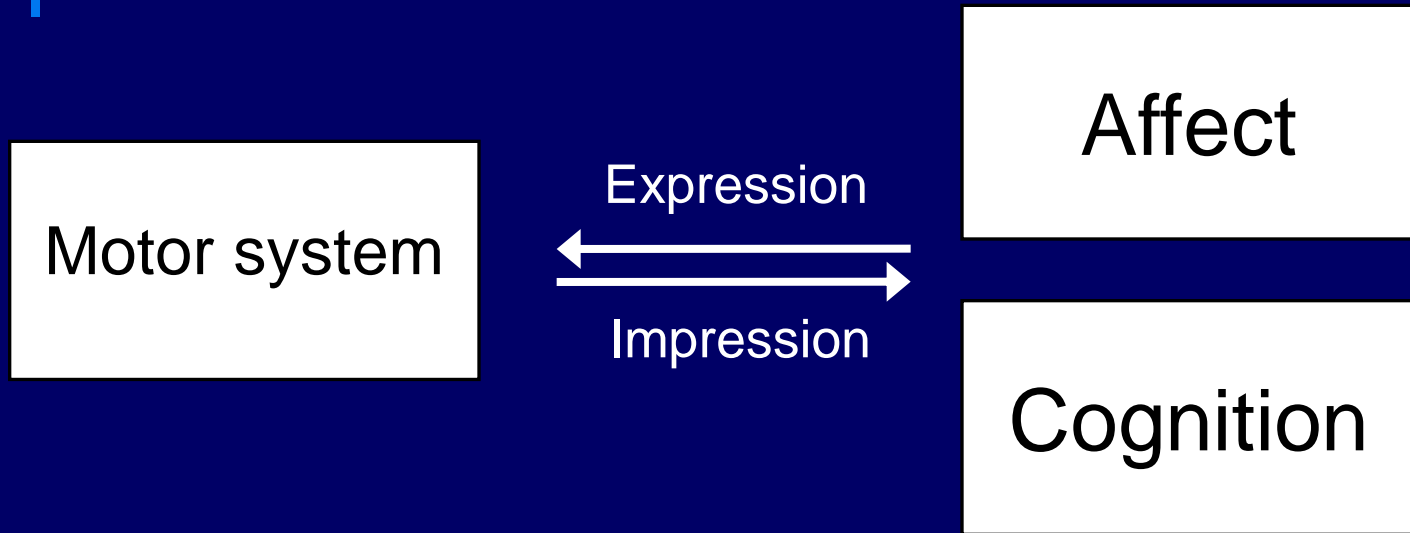


Extended definition

Embodiment denominates a field of research, in which the reciprocal influence of the *body* as a living, animate, moving organism on the one side and *cognition, emotion, perception* and *action* on the other side is investigated with respect to the expressive and impressive functions - at the individual, the interactional, and the extended level.

Koch & Fuchs, 2011

Bidirectionality



Bodyfeedback-Hypotheses:

Afferent Feedback plays a causal role in the experience of emotions, the formation of attitudes, and in behavior regulation (Adelman & Zajonc, 1987; Zajonc & Markus, 1984)

Die Welt des Charly Brown



Strack, Martin & Stepper, 1988



Cacioppo, Priester & Berntson, 1993





Embodiment Findings

	Stimulus / IV (motor)	Reaction / DV (cog./aff.)
Culture	Nodding and shaking of head	Faster categorization of kongruent categories
	Approach and avoidance motor behavior	Evaluation dependent on direction of movement
	Upright and slumped posture	Better memory for congruent live events
Gender	Make a fist	Effect on word processing

universal

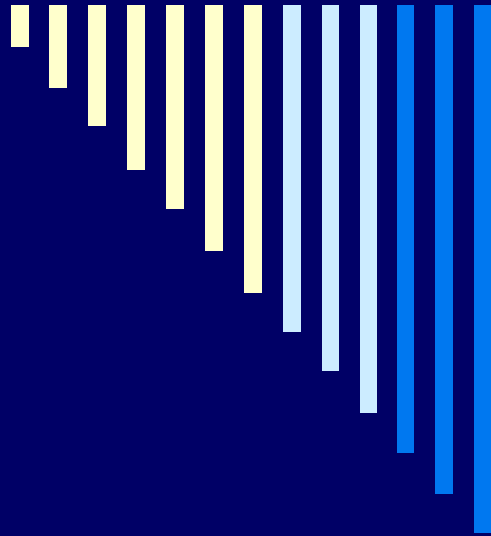


Body Feedback Hypotheses

- Facial Feedback Hypothesis (FFH; Laird, 1984)
- Postural Feedback Hypothesis (Riskind, 1984)
- Vocal Feedback Hypothesis (Hatfield et al., 1994)

Limitations:

Static orientation: Role of movement underestimated
Studies about *dynamic* body feedback are lacking



Sound Methods

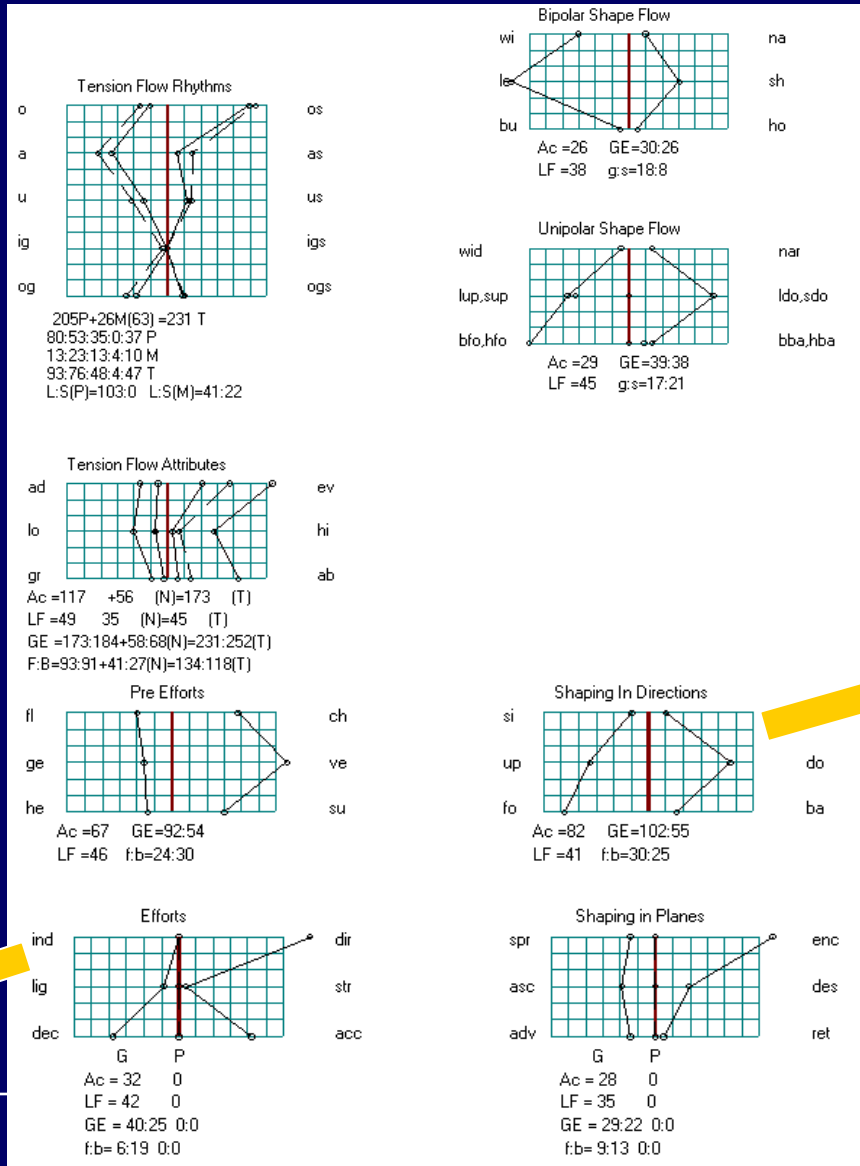
1. Movement Analysis

Methods to operationalize basic dimensions of movement



The Kestenberg Movement Profile

Rhythms



Attributes

Pre-Efforts

Efforts

Bipolar
Shape-Flow

Unipolar
Shape-Flow

Shape-Flow
Design

Spatial Bias

Shaping in
Directions

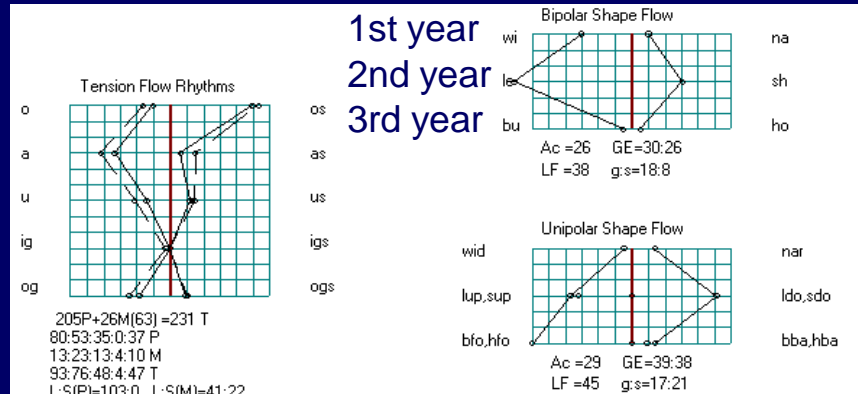
Shaping in
Planes

Gaze: Sex Diff.



Rhythms

The Kestenberg Movement Profile (Sample)



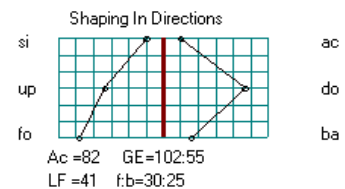
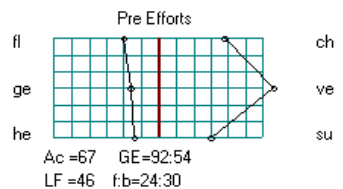
Bipolar Shape-Flow

Unipolar Shape-Flow

Tension Flow (indulgent vs. fighting; smooth vs sharp),
Movement Qualities

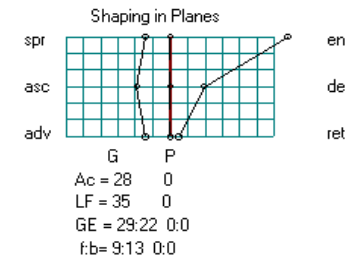
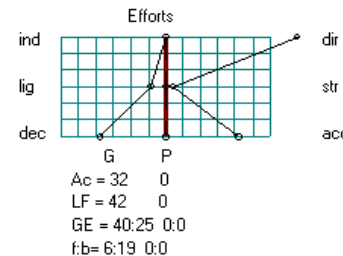
Shape Flow (open vs. closed, growing vs. shrinking, form changes),
Movement Shape

Pre-Efforts



Shaping in Directions

Efforts



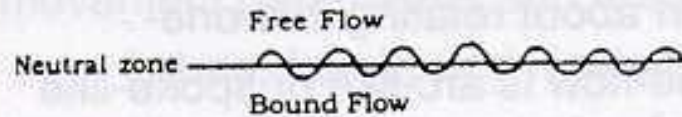
Shaping in Planes

Prototypical Movement Rhythms

Smooth vs. Sharp reversals

Scoring of Tension-Flow Rhythms:

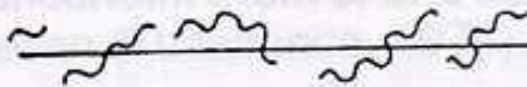
1.a. Oral - sucking type rhythm



1.b. Oral - snapping and biting type rhythm



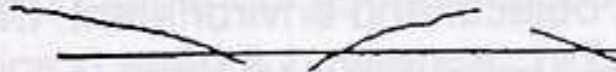
2.a. Anal Twisting - Sphincter type rhythm



2.b. Anal - Straining rhythm



3.a. Urethral - Aimless running type rhythm



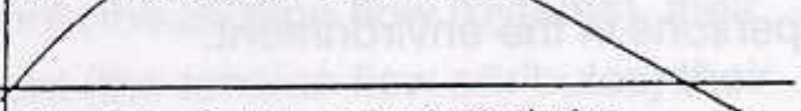
3.b. Urethral - Run-stop-go type rhythm



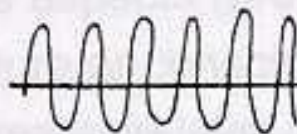
4.a. Inner-Genital - Undulant rhythm



4.b. Inner-Genital - Large wave sway rhythm



5.a. Outer-Genital - Jumping type rhythm



5.b. Outer-Genital - Leaping type rhythm

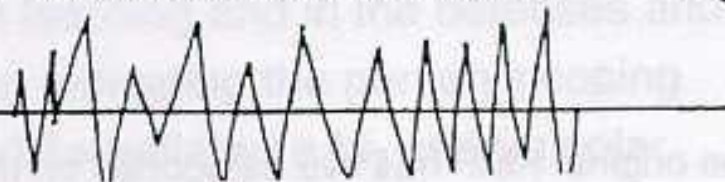
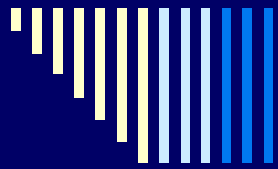
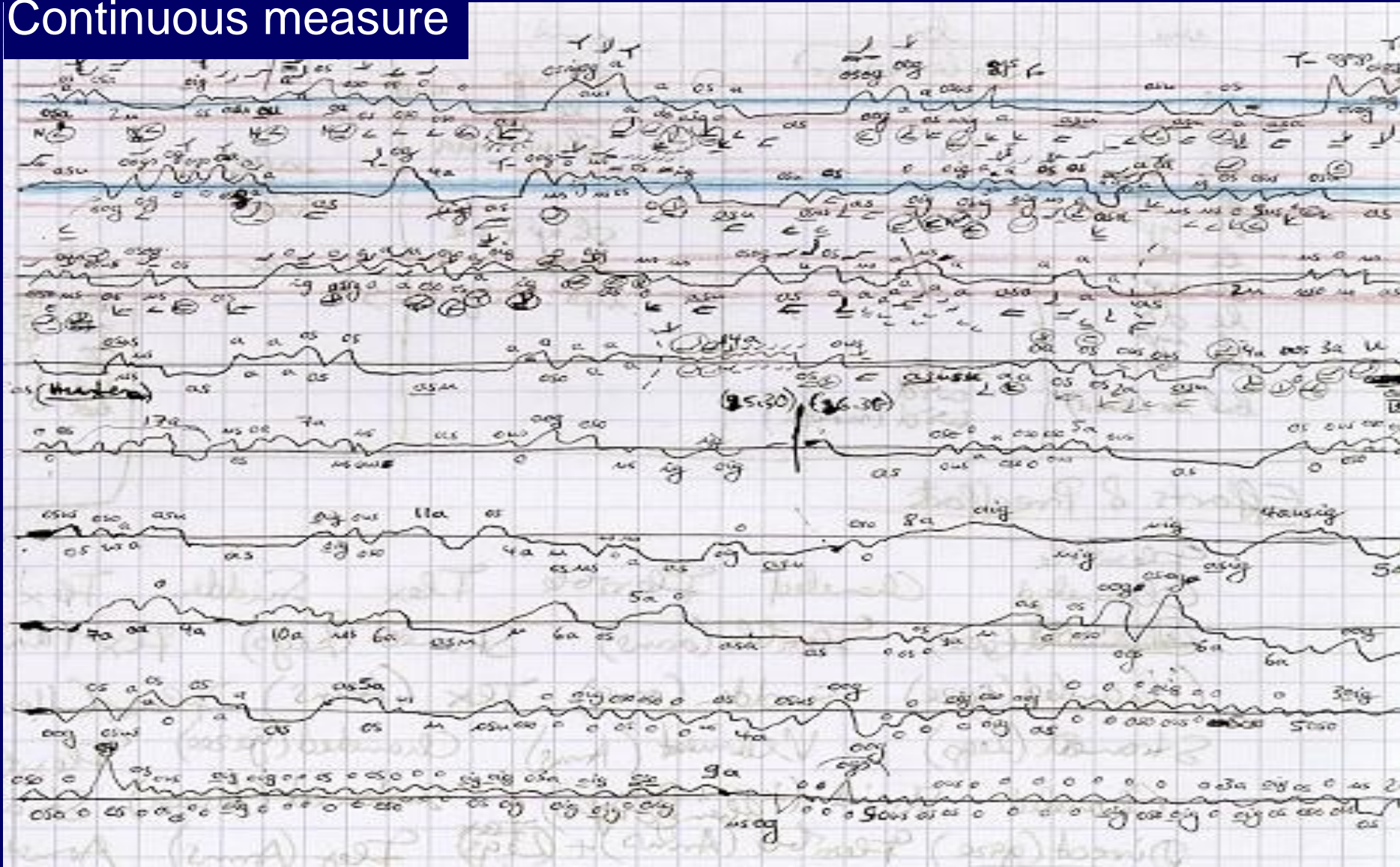


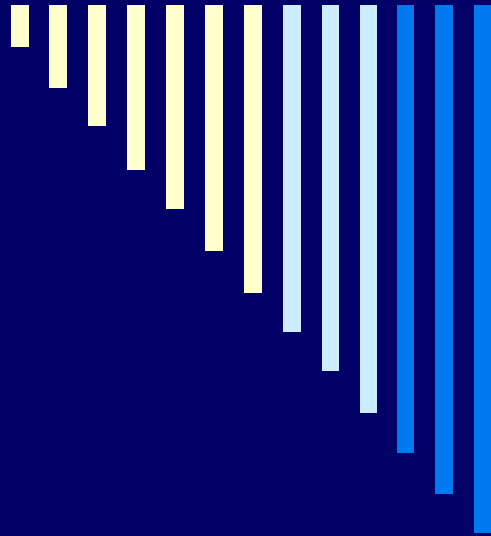
Fig.2: Tension flow rhythms (Loman, 1995)



Rhythms-Notation (Example)

Continuous measure



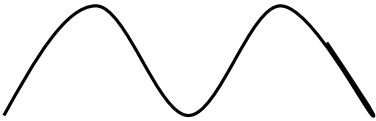
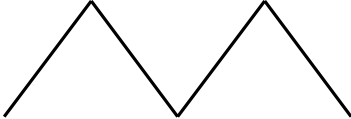


2. Experimental Studies: Dynamic Body Feedback

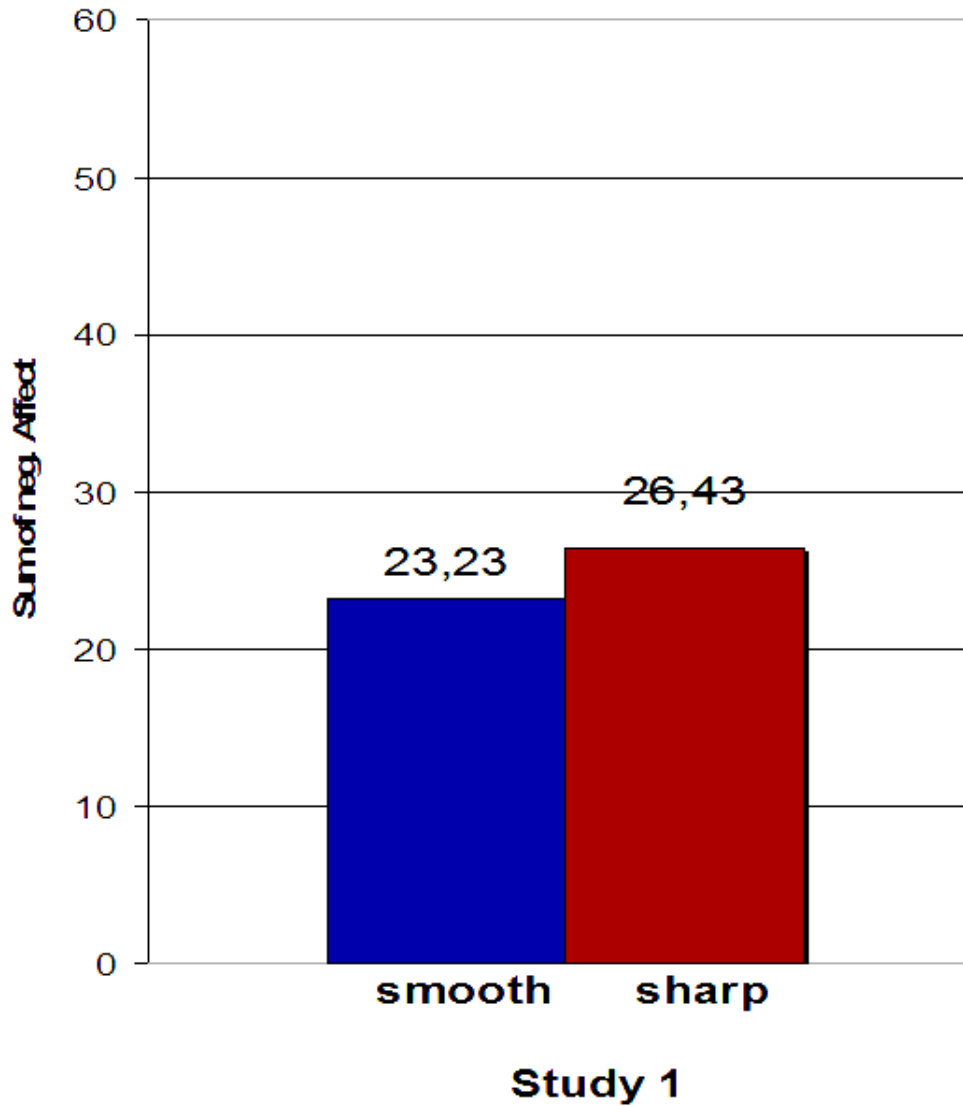
Movement Qualities affect
affect, attitudes and cognition

Design I



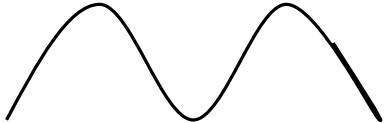



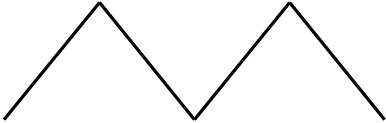


(Studies 1+2)

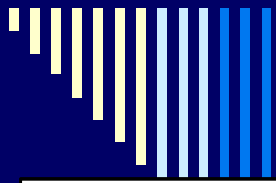
Movement Quality	Men	Women
Indulgent Rhythms 	15	15
Fighting Rhythms 	15	15
DVs: Cognition (Latencies of Categorization) and Affect		

Influence of Rhythms on Affect N=59



Design II (Studies 3+4)

Movement Shape		Approach	Avoidance
			
smooth	Indulgent Rhythms 	20 	 20 
	Fighting Rhythms 	 20	 20
DVs: Attitude (Evaluation of Ideographs) and Affect			

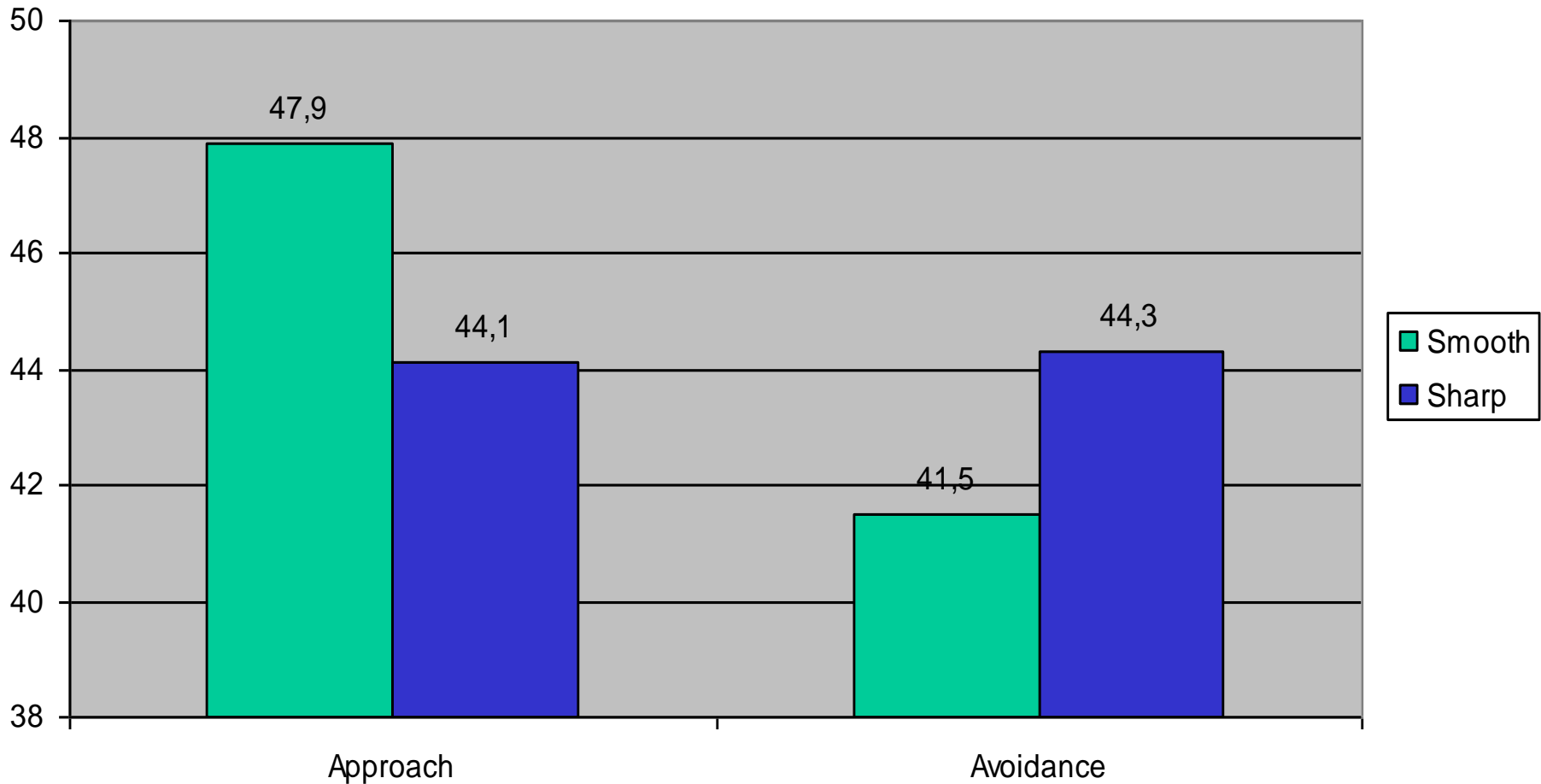


Results: R*S → Attitudes (n=66)

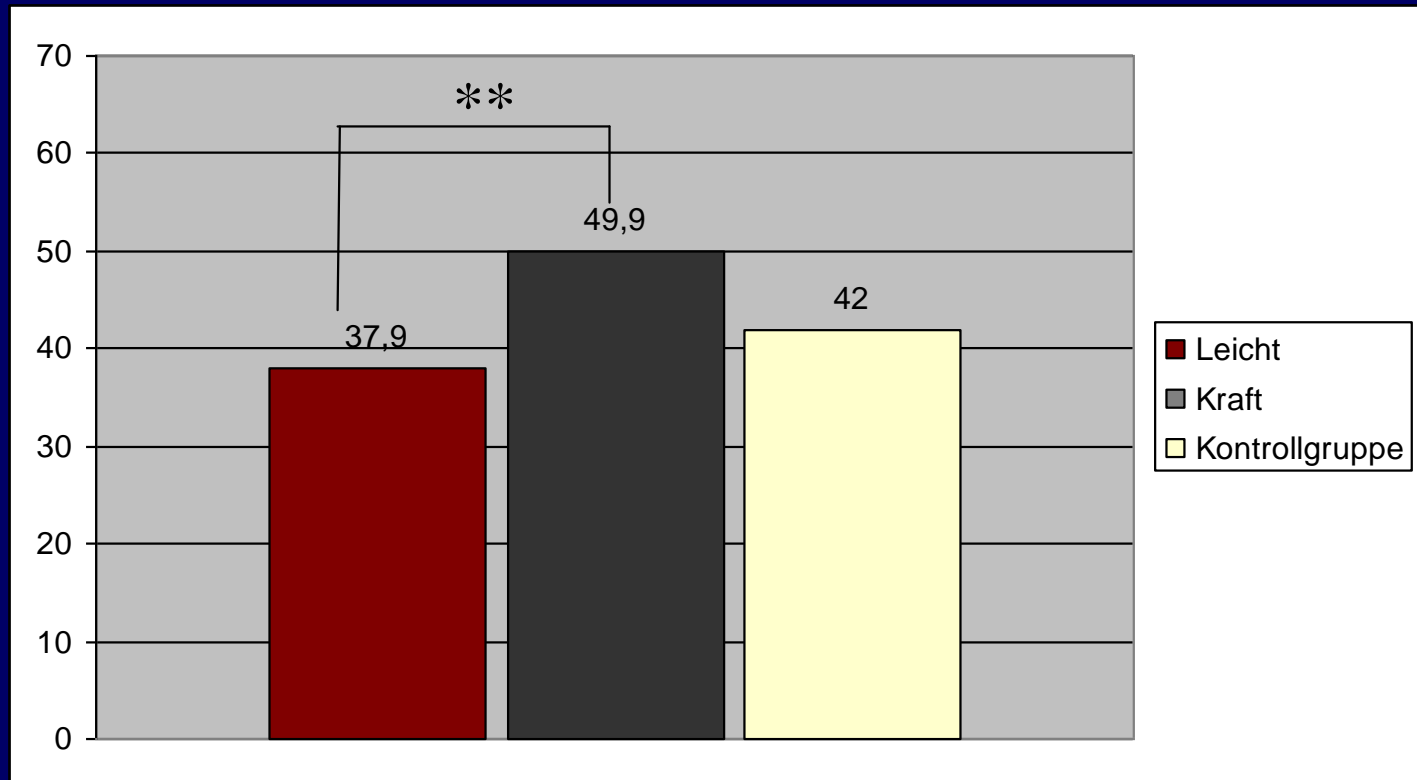
Influence of Rhythms and Shape on Attitudes

Shape: .045

R*S: .036

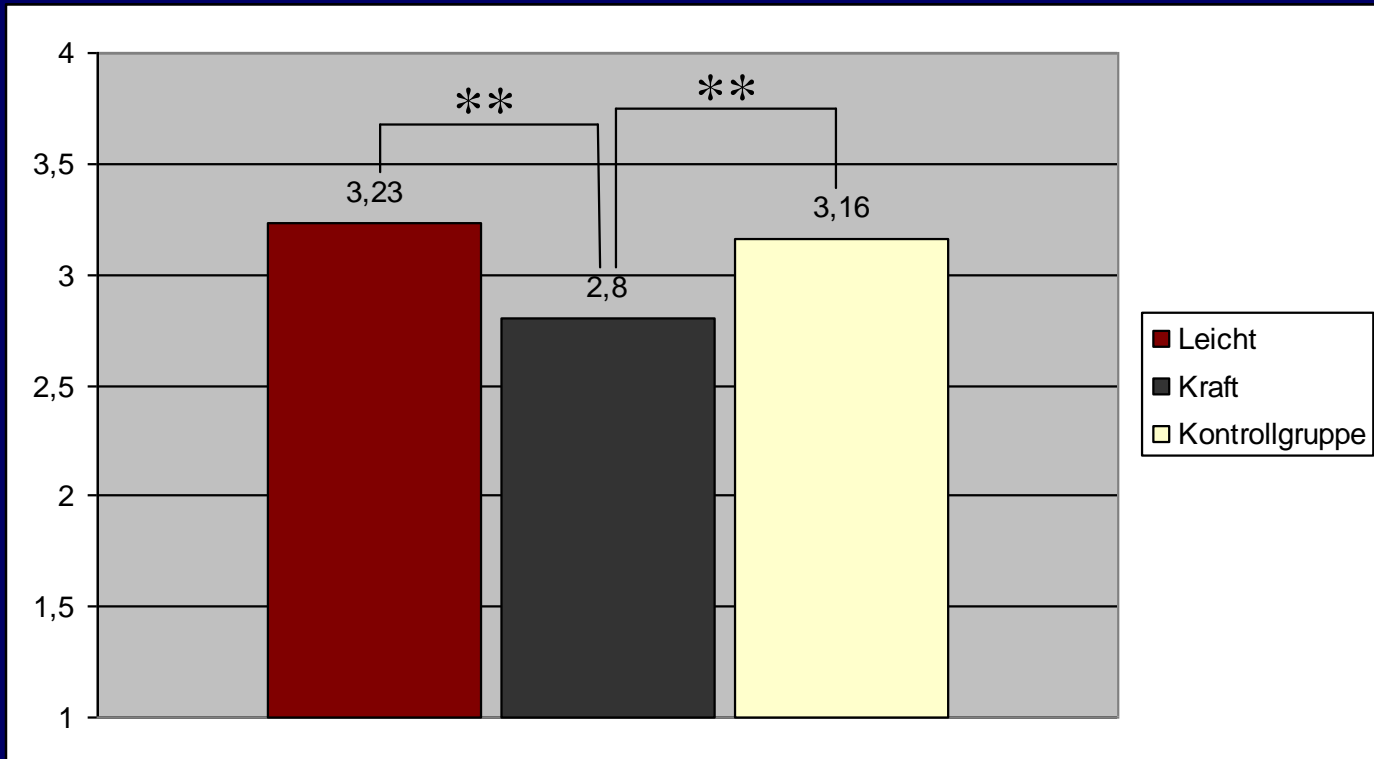


Results: Light vs. Strong on Affect



More indulgent affect was reported following light movement $F(2,91)=4.633$, $p=.012$, $\eta^2=.09$
(Scale: Sum Affect 13-91; high values = neg. affect).

Results: Effects of Light vs. Strong Movement on Memory



Participants remembered more positive life events after light movement $F(2,88)=5.693$, $p=.005$, $\eta^2=.12$ (high values = high positive memory valence)



Summary of experimental results

- Rhythms (tension-flow changes: smooth vs sharp) had effects on *affect* (smooth→pos)
 - Crossed design: *both shape- and tension-flow variation had an influence of comparable size on affect and attitudes* (rhythm moderates)
 - Further studies: influence of palm direction (toward vs away from body) on *affect (motor congruency)*
 - *Effects on cognition*: light (vs. strong) movement caused more *pos. affect* and better *memory* for positive words
-



Applied studies

1. Joydance
 2. Mirroring with Autistic Adults
-



The Joydance



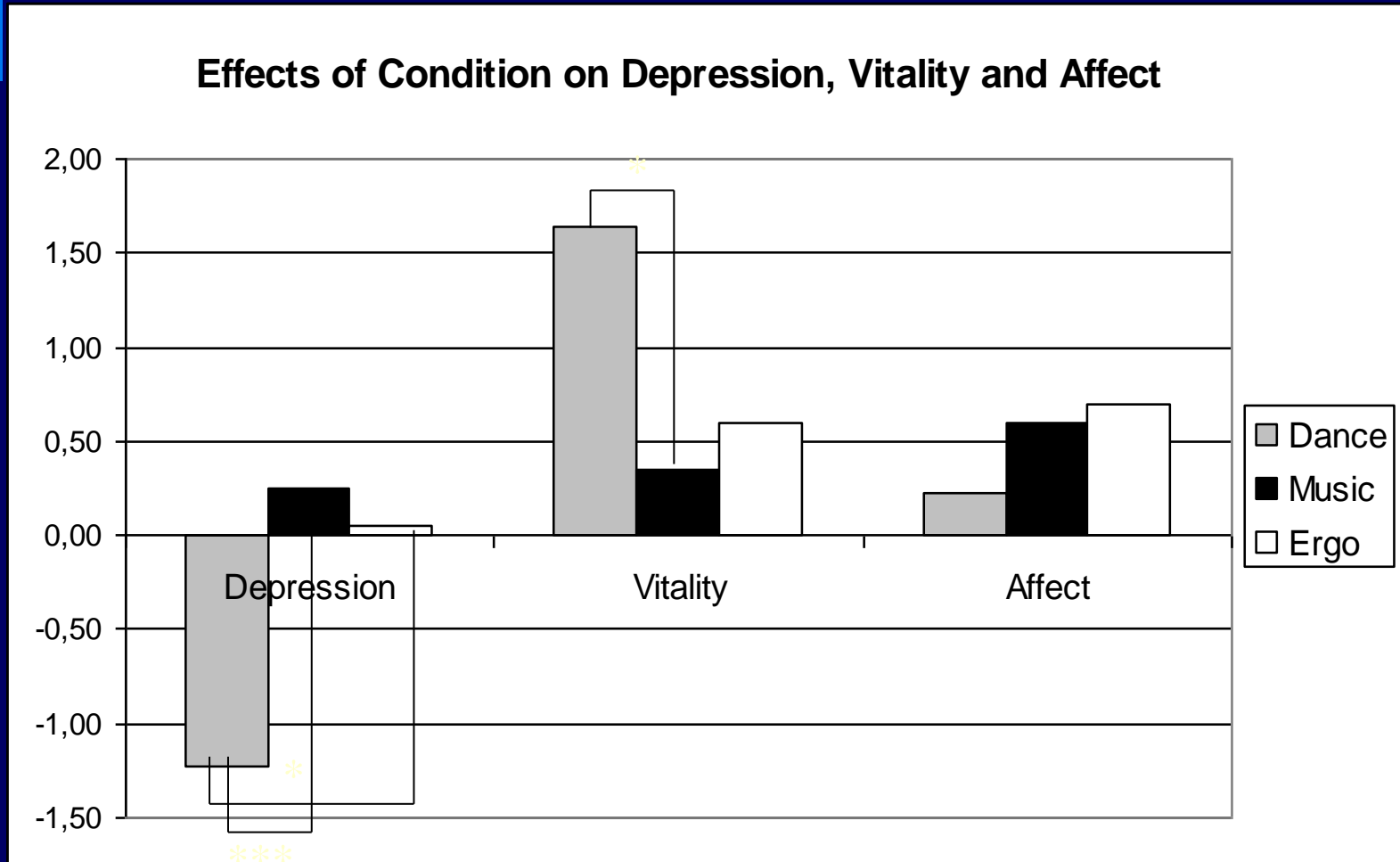
Effects of Jumping Movement on
Clinically Depressed Patients



Embodiment of Depression

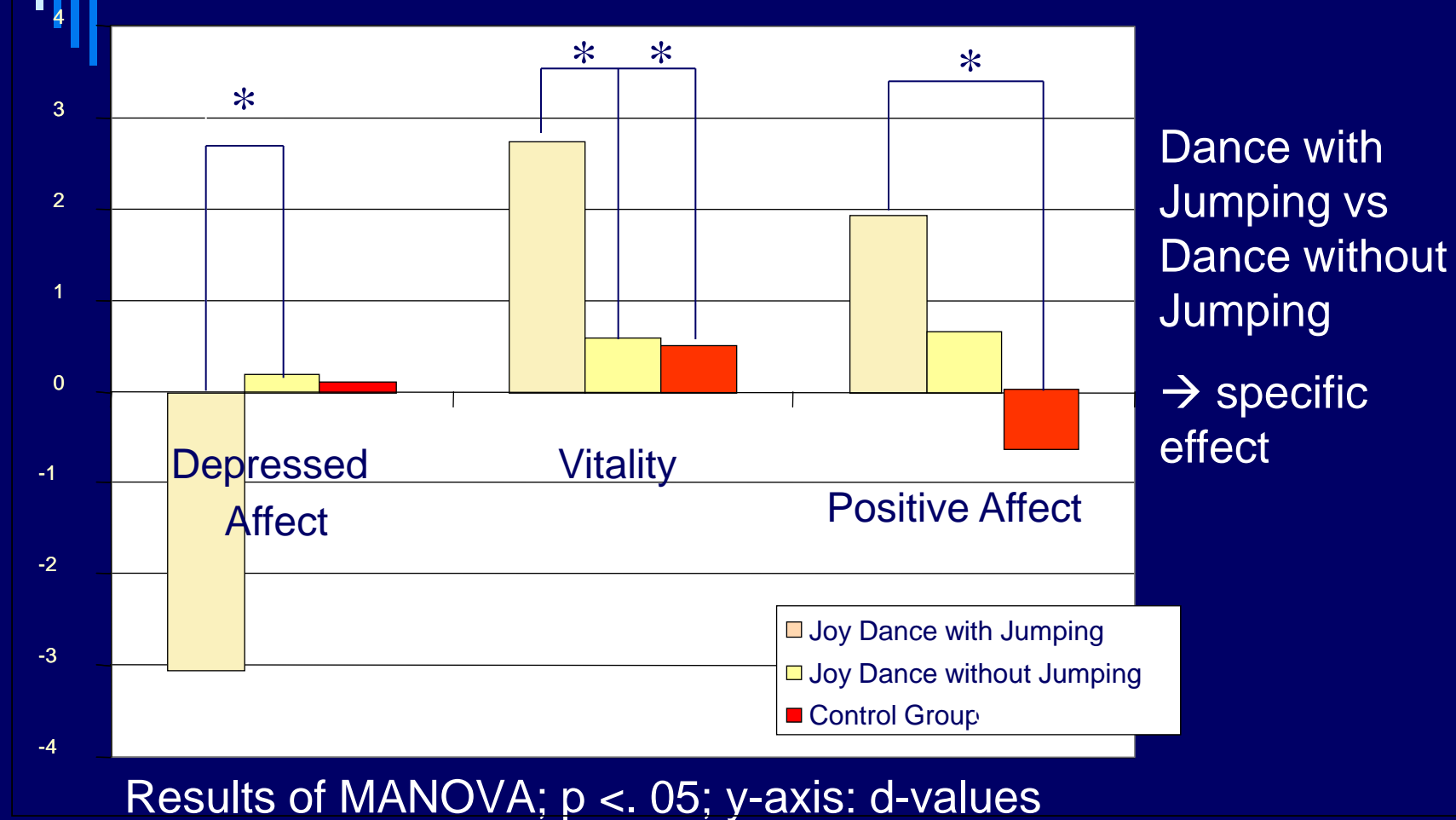
- Bowed posture with hanging head, shoulders and upper body, low muscle tone
 - Diagnosis of movement therapy: more than 30% in „neutral flow“ (Kestenberg-Amighi, et al., 1999) → lack of usual tonal changes
 - Low gait velocity, short steps, longer standing and gait cycle (Wendorff, Linnemann & Lemke, 2002)
 - Lack of vertical movements
-

Results Joydance I



Study 1 used two Oneway-ANOVAS; * $p < .05$; *** $p < .001$; y-axis: d-values; Koch et al. (2007). *The Arts in Psychotherapy*, 34, 340-349.

Results Joydance II (N=39):



N=39 clinically depressed patients (Koch, et al., *in prep.*)



Mirroring with Autistic* Adults

Effects of a DMT intervention on
autistic adults with Asperger syndrom

*and Schizophrenic

Mirroring with Autistic Adults

- Movement therapy practice and studies with autists so far encouraging
- but mainly **case studies** with **children**
- → quantitative studies and studies with adults are missing



Embodiment Theories - Autism

Assume earlier and more interactive impairment as ToM

Movement



Gestures

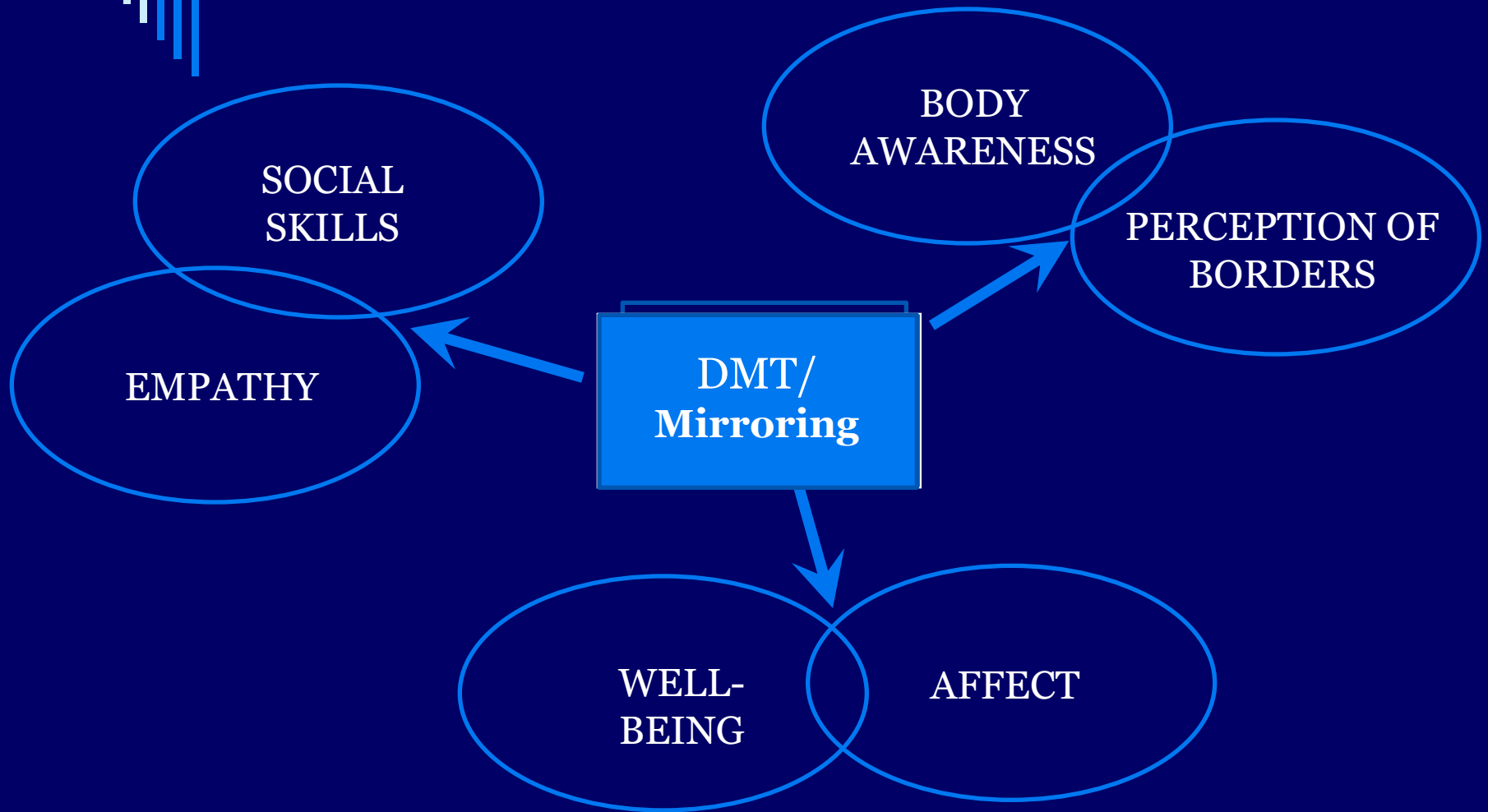
Expression

Posture



Interaction Theory, Gallagher (2004)
Impaired mirror neuron function (Gallese, 2005)

Dependent Measures





Method

- Sample: n=31 participants with ASD
 - 23 men; 8 women
 - Age 22.0 (SD = 7.7; range 16 – 47)
 - Diagnostic Control: AQ (Baron-Cohen)

 - Pre-Post-Test Design:
 - EG: Mirroring Intervention (7x; weekly rhythm)
 - CG: No intervention, same duration
-

Impressions from one of the groups



1. Initial Phase: Chace Circle or Circle Dance as a warm up (Initial Mirroring)



2. Main phase: Dyadic Mirroring

- a. Therapist mirrors participant
- b. Participant mirrors therapist
- c. Free dyadic dancing





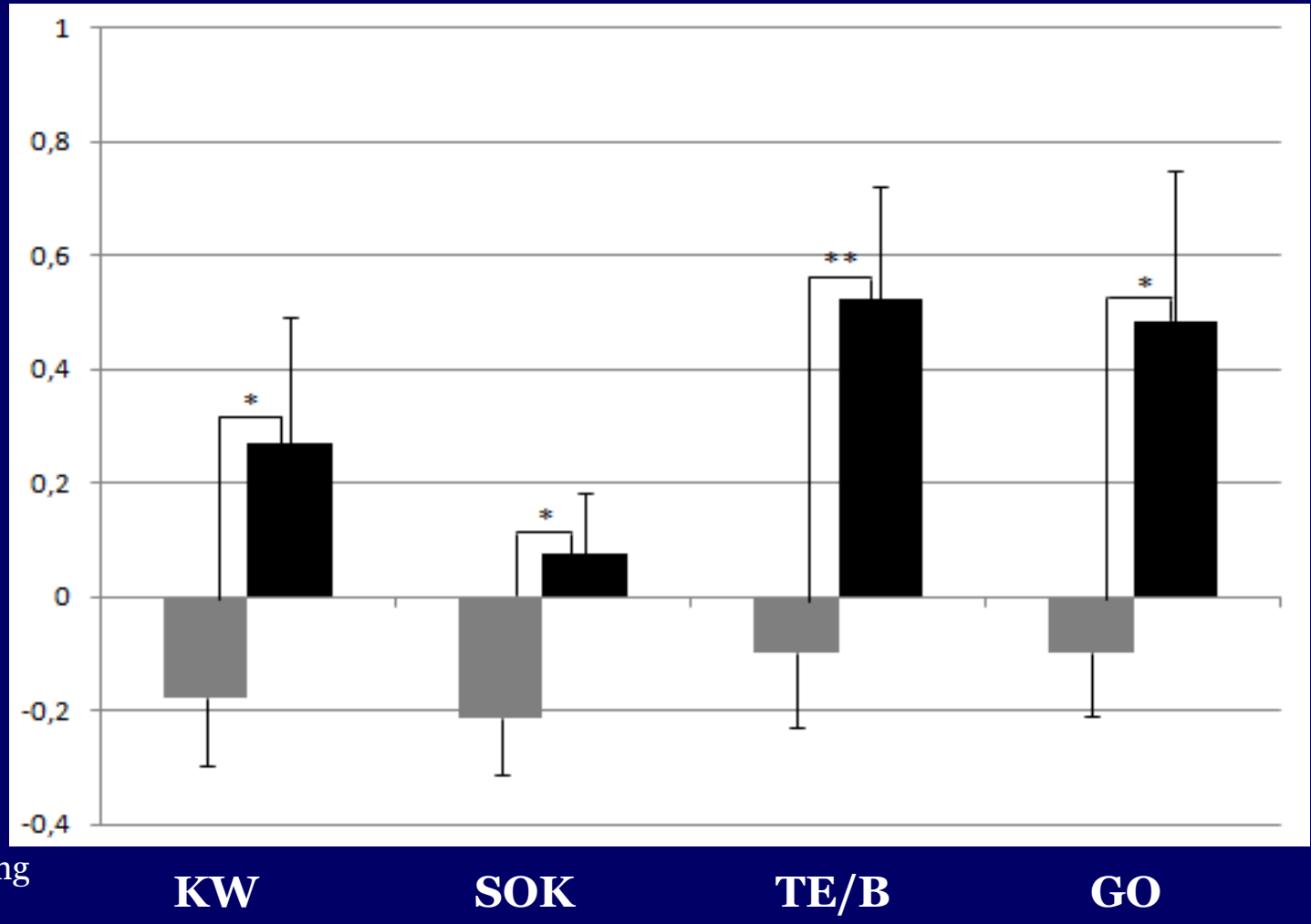


3. Final Phase: Group Mirroring
Improvisation of one participant of
the group, all others follow

→ Verbal exchange



Results (N=31)



KW: Body Awareness
SOK: Social Competence
TE: Relaxation/Well-Being
GO: Border Perception

** $p < .01$; * $p < .05$



Discussion

- *No change in empathy*

Despite the small N of 31: Four out of seven variables changed to the better

- *Higher body awareness*

- *Higher social competence*

- *Higher relaxation and well-being*

- *Better perception of borders between self and others*

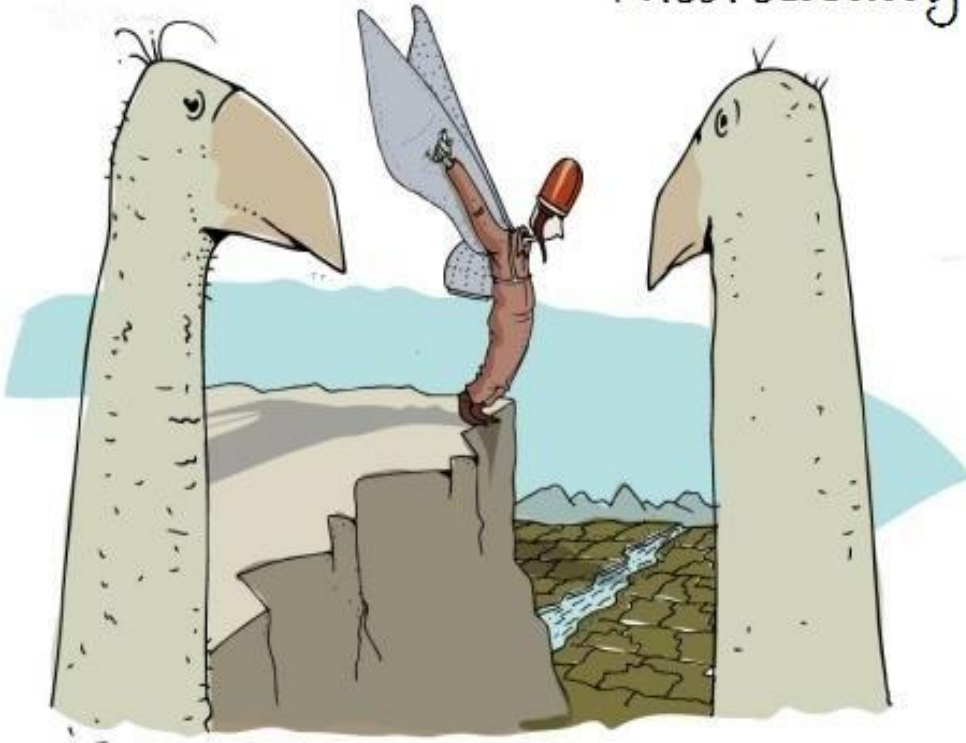


Encouraging for the planned RCT



You think it works?

Theoretically



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Further
Research



Further research

- ❑ Embodied/Enactive DMT (Koch & Fishman, 2011)
 - ❑ Embodied Arts Therapies (Koch & Fuchs, 2011)
 - ❑ Movement quality-related model (Habil), interaction model
 - ❑ Indications and contra-indications in DMT
 - ❑ Metaanalytic and review work for all diagnoses; RCTs (A/S) for our populations;
-

BMBF-Project: *Body Language of Movement and Dance*

Koch



Projekt Leader (PI): S. Koch (2009-2012; 495.000 €)

Cooperation Partners:

- T. Fuchs (Phenomenology, Psychiatry)
- C. Müller (Cognitive Linguist, Gesture Analysis)

Topics:

- Emergence of Metaphors
- Body Memory
- Synergies with Gesture Analysis
- → generate **knowledge for the applied field of DMT** in practice and training

Fuchs

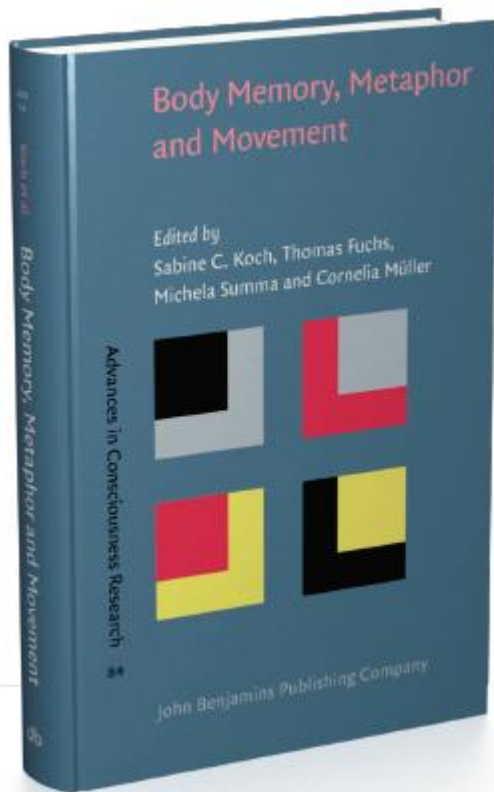


Müller





Most recent publication



Body Memory, Metaphor and Movement

Edited by

**Sabine C. Koch, Thomas Fuchs,
Michela Summa and Cornelia Müller**

Advances in Consciousness Studies

**Amsterdam: John Benjamins
Publishers.**

EU-Project (ITN) TESIS: Toward an Embodied Science of Intersubjectivity



Fuchs



Koch

2011-2014, 4.3 Mio. Euro, Coordinator and Heidelberg Node Leader: T. Fuchs; Debuty: S. Koch

Randomized Controlled Trials (RCTs) on movement therapy with **autistic and schizophrenic populations**

Cooperation Partners (a.o.): Gallagher, Reddy (UK), Gallese (I), Zahavi, Roepstorff (DK), Trevarthen (UK), etc.



Sattel

Trevarthen



Gallese



DeJaegher



DiPaolo





Summary



Dynamic movement qualities have an influence on **affect, attitudes** and **cognition** as *basic dimensions* of movement.



Effects of *shape and quality* of movement highlight the **importance of both elements** for affect and attitude formation.



Application: In all contexts where the body serves as a resonance ground for therapeutic interventions.



How to continue...

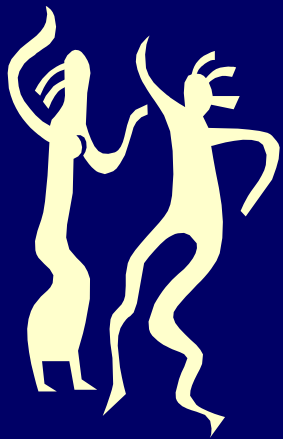


We need more research on interactive processes (*enactive models & methods*)



We need more bridges between basic research and applied practice
→ *translational research*

Thank you for your attention!

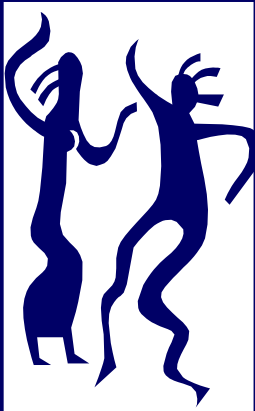


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Thank you!

- Thomas Fuchs
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- Laura Mehl
- Nancy Günther
- Jenny Jünger
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- Teresa Kunz
- Annabelle Humm
- Esther Weiss
- Eva Hentz
- Ursula Christmann
- Maike Golke
- Silvia Schlossmacher
- BMBF





References

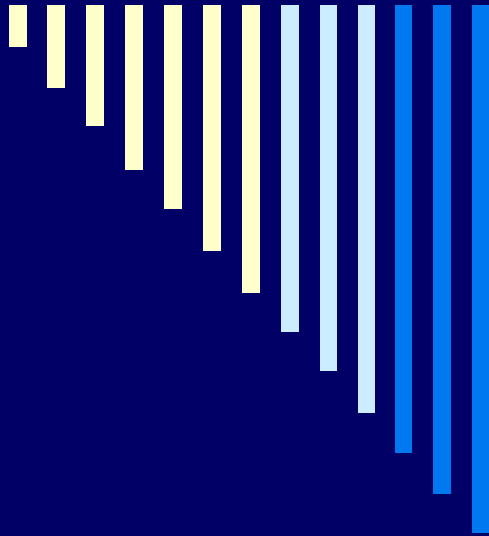
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Taxonomies

Embodied Affect



Affect and Movement: Fuchs

Leibrichtungen (Fuchs, 2000):

- A. **Centrifugal body-directions**
 - expansive (swelling of chest in inhaling)
 - expulsive (defecation, ejaculation, giving birth, etc.)
 - explosive (ballistic movement)
 - emenative (urination, exhalation, drifting, yielding gaze)
 - *recessive (retreating, avoiding)*
 - *attractive (blue pulls us into it)*

- B. **Centripetal body-directions**
 - receptive (inhale, suck, swallow, grasp)
 - reflexive (self-touch)
 - retentive (hold, strain)
 - *invasive / impulsive (of environment; light, noise, etc.)*
 - *repulsive (stimuli that cause retreat)*



Affect and Movement: PEM

- *Direction*: direction of movement in relation to the individual's body center (e.g., growing towards, shrinking away from)
 - *Tension* or Tension-Flow: Patterns of tension and relaxation of the muscles; implications of muscle tone / changes;
 - *Tempo*: (e.g., fast – tension; slow – ease) belongs to tension-flow qualities
-