A note in advance ...

"If we do not want to give up our true goal forever, then there is only one way out of the dilemma: that some of us dare to look at facts and theories, even though their knowledge is partly second-hand and incomplete - and they risk being ridiculous."

Prof. Dr. Erwin Schrödinger, 1887-1961
Founder of Quantum Mechanics u. Physics Nobel laureate
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Our Topics

- The impact of psychotrauma on our body
- The Body-Mind (Soul) Dilemma
- Effects at different levels
- The consequences of psychotrauma are reversible
- The process of healing
- Integrative concept from practice
Abuse, Mistreatment, Neglect

- International estimates of the global prevalence of MMV*:
  - Physical abuse: 25% of all adults
  - Sexual abuse: 20% of all women, and 8% of all men
  - Emotional and physical neglect as the most common form of MMV
  - Unrecorded??

* WHO Fact Sheet °150, Dec 2014

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Stress, trauma and illness

- "Anyone who has experienced and suffered traumatic stress in childhood and adolescence is more often not only mentally but also physically ill.
- The effect of these strains is strictly dose-dependent and cumulative.
- They work directly and they are life-long, i.e. "time does not heal the wounds."
- Source: Seidler H. et al., Handbook of Psychotraumatology, 2011
Stress, trauma and illness

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Trauma-stress disease

- **Biological** (Selye, 1936):
  general (nonspecific) adaptation syndrome

- **Psychological (Transactional)** (Lazarus, 1966):
  emotional evaluation determines the stress response

- **Psycho-neuro-immuno-endocrinological** (Henry, 1986):
  Interplay of body, psyche and immune system

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Medical model of disease

- Body and psyche are independent entities
- Mechanistic world view (Newton et al.)
- Linear and monocausal cause, effect model
- -> split model
Medical model of disease

Body and Mind Dilemma:
Principle of Complimentarity
- Different Phenomena
- Theory and Method
- Reality and Truth

Modern Physics

☐ Certain quantities do not change continuously, but in leaps and bounds (quantum physics)
☐ The observed can be particle or wave
☐ The observer (as a subject) is part of the system and has a significant influence on it
☐ Abolition of objectivity
☐ Quantum entanglement (correlation) and Quantum teleportation (communication) -> information transfer?
Matter, energy, information?

There is no matter but only a web of energies given shape by intelligent mind
Max Planck, founder of quantum physics u. Nobel laureate

Albert Einstein:
"What is presented to our senses as matter is in reality a high concentration of energy in a relatively small space."
I / Identity (psychology)

Psychotrauma

Body (physiology)

The consequences of psychotrauma for our body
The triune brain

- **Cerebral cortex ("human brain", neocortex)**
- Ratio, mental abilities, thinking, seeing, ...
- **Intermediate, midbrain ("mammalian brain")**
- Limbic system: emotions, implicit memory, ...
- **Brain ("reptile brain")**
- Vital functions (heartbeat, breathing, body temperature ...)
  - Fight, flight, paralysis
The triune brain

† Cerebral cortex ("human brain", neocortex)
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Regulative neural networks

- Prefrontal Cortex: central integration function: meaning, classification, reaction ("watchtower")
- Thalamus: filter for autobiographical memory ("cook")
- Hippocampus: memory (explicit memory), emotional evaluation, Control of the "I"- function
- Amygdala: "fire alarm", "alarm bell" for emotionally negative stimuli, anxiety, high stress, trauma
- Corpus callosum: Exchange of information between left and right brain (earlier in time development)
  - Noises, touch, odors ....
  - Remembering traumatic experiences activates right and deactivates left brain
- Cingulum: physical perception of who one is ("Inner GPS"), coordination of emotion and cognition
- Insula: connects the visceral sensations with emotions

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Regulative neural networks

Disruption of education and regulation of self-esteem, "I" structure, identity

Two axes of Stress Response
Stress Memory

- Very early facilitation of stress response
- Cortisol as a chronic stress hormone with a high neurodegenerative / toxic potential
- Permanent up-regulation and over-stimulation of the autonomic nervous system
- Change in glucocorticoid receptors (Fisch et al., 2004)

Imbalance in the nervous system

**Sympathicus**
- Tension
- Energy supply
- Motivation

**Parasympathetic**
- Relaxation
- Regenerative processes
- Healing

*Heart rate variability (HRV) as a marker for dysbalance*
Psychotrauma generates toxic stress

- Nervous system: hyperactive stress hormone axis (HPA axis)
- oxidative / nitrosative stress
- Hormone system: neurotransmitter disorder
- Immune system: chronic inflammation
- Cell level: mitochondriopathy (cellular energy deficiency)
- chronic (multisystem) disease

Psychotrauma generates toxic stress

Dose-effect

The greater the experience of abuse, the greater the inflammation and the influence on the mitochondria

Source: Böck et al. (2016), Mitochondrion
Why do we age and get sick?

- **Gene theory** (genotypic aging program, programmed cell death)
- Theory of **free radicals** (cell damage due to oxidative and nitrosative stress)
- **Wear theory** (telomeres, limited cell division)

Aging process and telomeres

![Aging process and telomeres](https://www.ta-5.de/media/image/dd/2e/24/Alterung.jpg)
Childhood psychotrauma shortens telomeres and speeds up the premature aging process

- Aversive life events
- Abuse
- Rape


Psychotrauma is inherited

Psychosocial stressors during pregnancy (including domestic violence) lead to shortened telomeres in the offspring

Source: Entringer et al., 2011, *PNAS*
Epigenetics as Missing Link

- Psychotrauma damages cellular function and causes symptoms that we call disease
- Connection between psyche and body
- Soft inheritance
- Transgenerational inheritance

Non-tangible cause (Psychotrauma)

Material effect (Symptom, illness)
Trauma, epigenetics and chronic disease

Psychotraumata & mental stress, Pollutants & toxins, heavy metals, mobile communications

↓

Biochemical vicious cycle: oxidative and nitrosative stress ↑

NO / ONOO cycle ("no, oh no")

↓

Chronic inflammation ↑

mitochondrial damage (ATP ↓)

↓

Chronic disease (multisystem diseases)

Causes and effects

Causes

- Psychotrauma
- Pollutants & poisons
- Heavy metals
- Electrosomg (EMF)
- Lack of exercise
- Malnourishment (over- and malnutrition)

Effects

- Cell stress
- Chronic inflammation
- Mitochondrial damage
- Lack of energy
- Varied symptoms
- Chronic diseases
Psychotrauma leaves behind traces in cell memory, which are also passed on.
Transgenerational trauma is reversible

- Inheritance is interrupted by improving living conditions

- Environmental conditions are changing the consequences of psychotrauma
  - Epigenetic transmission of dysfunctional biochemical reactions to the offspring of trauma victims
  - Increase in glucocorticoid receptor (GR) expression and decrease in DNA methylation of the GR promoter in the hippocampus (also in the germ cells of adult exposed persons and their male offspring)

Source: Potential of Environmental Enrichment to Prevent transgenerational Effects of Paternal Trauma; Gapp K. et al. Neuropsychopharmacology vol. 41 (2016)

Top down/bottom up - Regulation

- Prefrontal Cortex
- Thalamus
- Hippocampus
- Amygdala
- Brainstem
IoPT:
Integration of sensations, feeling and thinking

Control of emotional centers through the watchtower

From: The body keeps the score, van der Kolk B., 2016
Control of emotional centers through the watchtower

Increased activity in the left prefrontal cortex through "mindfulness training"

(Goller H., Experience, Remember, Act – An Introduction to Psychology, 2009)

What protects the telomeres?

✓ Exercise!
✓ Nutrition!
✓ Mindfulness!
✓ Constellation? (-> research needs!)

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What protects the telomeres?

- Support ...
- healthy parts?
- survival parts?
- Constellation? (-> research needs!)

Psychotraumata associated with ...

- high resource consumption of micronutrients, neurotransmitters (by survival parts)
- limited detoxification performance of the organism (e.g., HPU, COMT)
Body and psyche are one unit

- Separation between organic and psychological causes obsolete (Hill, 2014)

- Causes of dementia:
  - Chronic mental and traumatic stress (inner world)
  - Environmental pollutants (outside world)

- As within, so without (ecology, environmental destruction?)

Paradigm shift?
The process of healing

- Balancing the HPA axis
- Activation of the parasympathetic nervous system
- Cell stress ↓
- Inflammatory response ↓
- Energy generation in the cell ↑
  - Complex interaction through epigenetic changes

Causes of dementia:

- Chronic mental and traumatic stress (inner world)
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The process of healing

-> Synaptogenesis (Hebb's Law)

-> Neurogenesis (e.g., in the hippocampus)

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Healing Elixirs

- Patience: neural networks ↑
- Acceptance: fight-, flight mode ↓
- "Body awareness (in safety):" it's over" (visceral sensations, intuitive body awareness)
- Compassion (with me) with all inner parts

Multimodal integrative therapy concept

- Integration of all aspects of our being in the healing process
- Physical (feel: sensory, motor ...)
- Biochemical, neuro-endocrinological, immunological (vital substances, neurotransmitters, pollutants, hormones ...)
  emotional (feel, "intuitive feeling")
- cognitive (recognize, interpret, re-evaluate ...)
A4 - Concept®

- **Fill up** (vital and micronutrients, nutrition)
- **Detoxify** (pollutants, chemicals, metals ...)
- **Constellation** (identity-oriented psychotrauma therapy, IoPT)
- **Mindfulness** (MBSR: Body-Oriented Mental Training to regulate emotions, as an inner and outer attitude, and a basis for all therapeutic interventions)

Aim:

**Support the ability for self-regulation**

(Auto-poiesis: Self-organization Living systems)
Brain structure and neuroplasticity

- **Longitudinal study** v. Hölzel et al., 2009 a. 2010
- **Eight-week mindfulness training (MBSR)** with control group
- **Decrease** in the density of the gray matter in the amygdala (amygdala: “fire alarm”, "alarm bell" for emotional negative stimuli, anxiety, heavy stress, trauma)
- **Increase** in the density of gray matter in the hippocampus (memory, "I"- function, emotional evaluation) and in the right Insular cortex ("gut feeling", visceral sensations)

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**After 8 weeks of training structural change in the brain!**
Neuroplasticity and healing

"Each time we contemplate on the past, we subtly transform its representation in the brain and alter something in the underlying neural circuitry"

(Jonah Lehrer on Memory reconsolidation, K. Nader et al., 2010)
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