

The Re-Activation of Self-Healing Powers from a Neurobiological Perspective

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Abstract

From a biological perspective all healing is self-healing. Medical interventions can only support this process, but not cause it. A person's self-healing capacities are easily obstructed acutely by stress and anxiety, and chronically by believe and mind-sets in the frontal cortex, which block the way to the self-healing powers anchored in the brain stem. It takes a combination of cognitive and emotional interventions to change the mind-sets Medical interventions will only be sustainably successful when a doctor succeeds in creating a supportive relationship with her/his patient, which allows the patient to strengthen his or her sense of coherence. Being familiar with cultural differences and/or similarities and knowing how to address them in a way that creates trust is essential for the success of this process.

The medical systems of the industrial western world are not (yet) geared towards creating the structures and providing the training needed for this change in approach, but there is hope that the enormous cost-reduction potential of such measures will trigger the necessary steps.

Keywords: Neurobiology, Healing, Salutogenesis, Self-Healing.

Introduction: All Healing is Essentially Self-Healing

Illnesses occur because an organism's innate powers to deal adequately with the disturbances of its inner balance are overtaxed. Under such conditions, various emergency reactions are activated to restore this balance. If this is not successful, their long-term activation will lead to maladaptive changes (initially functional and over time also structural). Once established, such structural changes are particularly difficult to revoke. They lead to secondary adaptation processes, which in turn fortify the primary maladaptive changes. Thus, the organism enters a state of restricted vegetative reactivity and a decreased flexibility of internal organisation, which is defined as a chronic illness. In such cases an organism's reactions to rebalance itself, i.e. its self-healing power, is suppressed. Its ability to recognize the primary disturbance and to restore balance with adequate measures is limited by the reactive changes triggered by the

primary disturbance. Either the disturbance is not properly recognized or the reactions remain inadequate.

Medical interventions may contribute to correcting the functional and/or structural changes, and thus reactivate beneficial processes of regeneration and reorganisation. They may also contribute to reducing the degree and the intensity of maladaptive reactions to a primary disturbance of an organism's internal organisation. The critical factor for a person's recovery from such an illness is his or her commitment to the medical interventions. Therefore the healing process depends on a person's belief in the ability of his or her body to activate its self-healing power. Because all healing is essentially self-healing, the art of medicine is essentially finding a way to support these very self-healing powers of the patients.

In the past, the importance of central nervous regulatory mechanisms for the integrative control of physical processes has been gravely underestimated. The central nervous regulatory mechanisms responsible for the integrative control and coordination of body functions are located in the older, more deeply embedded areas of the brain, in particular in the brain stem. These neuronal networks and control circuits are already established in the pre-natal phase. They remain fragile and easily disturbed by higher level, limbic, cortical and especially pre-frontal influences (Hüther, 2006).

The Obstruction of Self-Healing Processes

Fear and Anxiety are by far the strongest feelings, which interfere with a balanced regulation of body function. The activation of neuronal networks in the limbic system, in particular the Amygdala, which in turn unbalances the brain stem's emergency reactions for survival under aversion conditions. Whether and to which extent perceived changes of her or his inner balance i.e. certain symptoms of an illness cause anxious reactions in the patient, depends on how she or he evaluates these perceptions. This assessment is always subjective and based on the patient's previous experiences (Hüther, 2004).

Subjective experiences are anchored in the prefrontal cortex as tightly linked cognitive, emotional, and physical neuronal networks and control circuits. They are represented as a certain memory or image, which is linked to a certain feeling and a certain physical reaction (somatic markers). Experiences made a person in similar situations are integrated in the prefrontal cortex to what is called a person's mind-set.

They are meta-representations of a person's subjective experience anchored in the pre-frontal cortex as well as the basis for the subjective evaluations of everything that happens to the respective person. In case of an illness this would be the subjective perception of a change on the physical level. Depending on this experience-based mind-set, she or he may react with anxiety or stress, pay attention to the symptoms or suppress and deny them, see a doctor or not, com-

ply to a certain treatment or refuse it – and last but not least believe in recovery and make an effort towards it.

Once anchored in the pre-frontal cortex, these mind-sets are very difficult to transform. Since they are linked to emotions and physical reactions, an approach of purely cognitive interventions (information, instruction, descriptions, etc.) rarely has sustainable effects, unless the emotional network-components of the underlying networks in the prefrontal cortex are simultaneously activated. Similarly, emotional interventions (attention, empathy, care) do also not yield the desired results, as long as the cognitive parts of these interlinked networks are not activated at the same time. Mind-sets can only be transformed sustainably, when by inviting and encouraging the respective patient to be open for a new, different experience. The ability of a doctor to invite and encourage a patient to embark on such a new experience is dependant on the respective doctor's stance and mind-set. The doctor's mind-set determines whether his or her therapeutic interventions will cause a change of the patient's mind-set, and therefore re-activate effect on the patient's self-healing powers or whether they fail to do this.

In our culture thinking is still considered to be the main function of the human brain. Descartes' 'cogito, ergo sum', I think therefore I am, is the core expression and the origin of this idea. Recent neurobiological research is providing an increasing challenge to this conviction. As proven by neurobiologists, our brain primarily structures itself according to the signal patterns transmitted from the body to the brain in the early phases of its development. Thus, the physical experiences control the organisation of synaptic circuit patterns in the early developing, deeper areas of the brain. The primary tasks of these areas of the brain, which are developed prior to birth as well as in the early stages of infancy are to integrate, coordinate and harmonise the various processes in the body. This creates a basis for the child to relate to her or his environment, particularly to her or his psychological parents. And only then do the experiences gained from these relations become the determining factor the neuronal circuit patterns forming in the cortex. This is the time when relating to the surrounding world, mainly to the psychological parents becomes the most important task of the developing brain (Hüther, 2006).

Thinking plays no part in these early stages of the brain's development; the brain structures itself exclusively according to the child's own physical experiences as well as through experiences made when relating directly to persons and objects in one's environment. Only when children learn to speak, and simultaneously develop the ability for symbolic thinking do their own thoughts, ideas, and convictions become a structuring force in the further development of neuronal circuit patterns in the respective, extremely complex and slowly developing areas of the cortex, mainly the prefrontal cortex. These thoughts, ideas, and convictions serve to stabilise whatever a person considers to constitute him- or herself; everything that experience has taught her or him to be important, necessary, and useful for the preservation of her or his identity (Hüther, 2004).

Now we can understand the true consequences of Descartes' insight 'I think therefore I am': Everything I have undertaken to stabilise my own identity through the process of thinking will automatically cease to exist, when I stop thinking. The idea of my own 'I' nourished by nothing but my own thinking disappears. What remains are the parts of one's own identity, which are not sustained by one's own thinking. They are the parts formed through what we have experienced, physically and directly related to other people and the world around us. It is a liberating feeling to re-encounter one's authentic self by letting go of one's ego-centred thinking.

In our culture only few people have experienced this feeling. Most of us are too afraid to lose ourselves in the process of letting go.

The Re-Activation of Self-Healing Powers

Every human being commands a wide range of mechanisms, reactions, and behavioural patterns, which address different levels and contribute in specific ways to the re-balancing of a disturbed internal equilibrium.

Without these self-healing powers, no wound would heal, no infection would be overcome, no one would recover after an operation – in other words, there would be no convalescence after an illness. Every patient has these innate self-healing powers, which can be suppressed and prevented from unfolding when the patient thinks certain thoughts or fosters certain ideas as described in the previous section. What a person has experienced in her or his life, how she or he subjectively evaluates these experiences, and the kind of mind-set developed as a result determines whether a patient's self healing powers will be re-activated or not.

Knowing this it becomes evident that medical interventions will only prove effective and sustainable when they aim at succeed in effectively supporting and/or re-activating the patient's self-healing powers (Antonovsky, 1987; Dörner, 2003).

From a neurobiological perspective the primary goal has to be to transform those ideas, stances, and mind-sets, which are anchored in the prefrontal cortex and which suppress the re-activation of the organism's self-healing powers. The prefrontal cortex's neuronal networks and the synaptic circuit patterns which form the bases of these ideas, stances, and mind-sets are developed later in a person's life than the networks and neuronal circuits responsible for the regulation of physical processes, which are embedded in the lower-lying older areas of the brain (Hüther, 2006). This explains why it is only possible to re-activate a patient's suppressed self-healing powers, when the respective patient succeeds in finding something he or she had lost, or when the patient succeeds in re-relating to something lost or interrupted.

Practically speaking, this means that the patient has to be given the opportunity to experience something that reinforces his feeling of coherence. Experiences of not being connected, of superimposed by experiences, which tie up

with her or his original experiences of coherence, of connection and of being able to create –made in the pre-natal phase, or during infancy.

There is a wide range of therapeutic interventions to which a patient can be invited, encouraged, and inspired to participate in and comply with. It is the doctor's task to find out in every individual case just which ones are best suited, depending on the patient's experiences and the resulting mind-sets. Studies have confirmed the efficiency of a series of therapeutic interventions such as various relaxation techniques (Benson, 1976; Dusek et al., 2006), procedures to strengthen self-regulation (Kabat-Zinn et al., 1986; Miller & Rollnick, 2002), meditation techniques (Kabat-Zinn et al., 1992; Astin, 1997; Davidson 2003), as well as various processes to transform mind-sets and stances created for Lifestyle-Change-Management (Ornish et al., 1988; Michalsen, 2005).

The Relevance of Culture in the Re-Activation of Self-Healing Powers

Neurobiological findings back up Aaron Antonovsky's salutogenetic approach (Antonovsky, 1987). In this approach he distinguishes between two major components, the General Resistance Resources (GRRs) and the Sense of Coherence (SOC). The GRRs are biological, material and psychological factors, which enable individuals and/or groups to perceive their lives as consistent and understandable: They have a storyline along which they interpret their lives. Such factors are education, material wealth, belonging to a stable environment, self-esteem, intelligence, the ability to engage with something other than oneself, traditions, the ability to connect, etc. These resources allow a person to cope better with problematic situations such as stress and illness, to balance out inner disturbances of their organisms without having to resort to maladaptive changes.

When it comes to engaging in a therapeutic process, according to Antonovsky (Antonovsky, 1987), a patient's the Sense of Coherence (SOC) is critical for the outcome. SOC is a flexible process, which involves a number of coping strategies in order to guarantee survival and generate health.

Antonovsky defines it as a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable and explicable; (2) the resources are available to one to meet the demands posed by the stimuli; and (3) these demands are challenges, worthy of investment and engagement (Antonovsky, 1987).

In the context of medicine and healing this implies that doctors have to be aware of how they can stimulate and deepen their patient's SOC if they want to bring about health rather than combat disease. To help their patients understand (1), manage (2) and make sense (3) of what is happening to them, they must be aware of cultural differences.

The basic requirements to bridge cultural gaps are sensitivity and self-consciousness: the understanding of other behaviours and ways of thinking as well as the ability to express one's own point of view in a transparent way with the aim to be understood and respected by staying flexible where this is possible, and being clear where this is necessary. It is a balance, situatively adapted, between four parts:

- knowledge (about other cultures, people, nations, behaviours ...),
- empathy (understanding feelings and needs of other people),
- self-confidence (knowing what I want, my strengths and weaknesses, emotional stability),
- cultural identity (knowledge about one's own culture).

Here are some examples of cultural differences:

- In the Americas as well as in Arabic countries the pauses between words are usually not too long, while in India and Japan pauses can give a contradictory sense to the spoken words.
- Enduring silence is perceived as perfectly comfortable in India, Indonesia and Japan, to the point where being unnecessarily talkative is considered rude and a sign of poor self-control. To some in Europe, North America and Australia, however, it may feel as if a faux pas has been committed and thus cause insecurity and embarrassment. Scandinavians, by the standards of other Western cultures, are more tolerant of silent breaks during conversations.
- In many cultures all over the world, avoiding eye contact or looking at the ground when talking to one's parents, an elder, or one of higher social status is a sign of respect. In contrast, such body language can be construed as deception, boredom, disinterest or shame (on the part of the doer) in others.
- In India showing somebody the palm of your hand is regarded as a gesture of blessing the person, mostly done by elders. Most Hindu and Buddhist deities are depicted as showing the palm of their right hand, while in some east European countries it is considered a rude gesture. Similar is the use of the hand as a sign for someone to come. Bending the index finger with the palm facing up should be avoided in some cultures and replaced with a grasping hand motion with a downward or outward facing palm.

Another important line along which cultures differ is context. In some cultures such as the Chinese culture, the implicit part of a communication is critical, expecting the participants to receive and understand information, which is not given verbally. In the Germanic countries in turn, being able to express one-self in precise and correct words is considered the vital ingredient for good communication.

As Edward T. Hall puts it (Hall, 1989), the matter of contexting requires a decision of how much information the other person can be expected to possess on a given subject. It appears that all cultures arrange their members and relationships along the context scale, and one of the great communication strate-

gies, whether addressing a single person or an entire group, is to ascertain the correct level of contexting one's communication. To give people information they do not need is to 'talk down' to them; not to give them enough information is to mystify them. The remarkable thing about human beings is that they make these adjustments automatically, and, in the majority of cases, they manage to produce a high proportion of messages that are appropriate. Here, too the rules vary from culture to culture, so that to infer by the level of contexting that 'they' do not understand may be an insult, even though your assumption is correct.⁵

Low context societies see permanence in rules and regulations rather than on human relations (Hall, 1989). By limiting the building of relationships between patients and their doctors according to the false principle of 'time is money', we are moving further down the road to depersonalisation, reducing feedback to a minimum and lowering the level of congruence, which in turn prevents us from building stable relationships.

The perception of time does not only vary culturally from country to country, but also according to age (Hall, 1989). In his article 'High context illness in a low context medical world' (Hallenbeck, 2006) emphasizes that how time is perceived also constitutes a cultural difference between e.g. elderly patients and young medical staff. Studies have shown that to elderly patients young clinicians move so fast, that they become virtually invisible, whereas the fast moving young clinicians are led to perceive the slow-moving as statues rather than living beings.

These studies also indicate that clinicians are often so short of time that they tend to talk rather than take time to listen to what a patient wants to share. It seems evident that in these cases the difference in time perception leads to unsatisfactory communication for both sides – the doctor cannot be sure whether her or his information has been understood, and the patient is left with his questions, observations, and worries (Hallenbeck, 2006).

For a patient, not being treated respectfully, not being listened to, and not being understood by his or her doctor leads to a relationship without the trust, which is the key to being able to follow an invitation to make a new experience. In the world of Western Medicine, there is a power imbalance between a doctor and her/his patient. This is inherent in our system of medicine, where the expert knows best, and the patient is expected to follow the expert's recommendation. This situation leaves the doctor with the responsibility of structuring the process and developing a relationship which is favourable to the re-activation of the patient's self-healing powers. Having inter-cultural experience and the resulting ability to create an empathic connection across cultural differences are key trust-building elements. Being aware of one's own cultural identity and thus able to accept cultural differences without prejudice and judgment allows the doctor to engage as a person, not only as the 'expert'.

Although the industrialisation of medicine and the trend towards specialisation (Rees, 2008) are making it difficult for doctors to engage with their pa-

⁵ Hall, E. T. (1989). *The Dance of Life. The Other Dimension of Time*. New York: Random House.

tients, communication remains a critical factor. Communication, defined as a process by which we assign and convey meaning in an attempt to create shared understanding requires a vast repertoire of skills in intrapersonal and interpersonal processing, listening, observing, speaking, questioning, analysing, and evaluating. To make it work across cultures, intercultural training helps a great deal. But the main ingredient, regardless of differences in culture, age, gender, personal biographies is empathy, defined by Carl Rogers (1959) as ‘to perceive the internal frame of reference of another with accuracy and with the emotional components and meanings which pertain thereto as if one were the person, but without ever losing the “as if” condition. Thus, it means to sense the hurt or the pleasure of another as he senses it and to perceive the causes thereof as he perceives them, but without ever losing the recognition that it is as if I were hurt or pleased and so forth.’

Empathy enables human beings to be connected on a very deep level. Rosenberg, Rogers’ student has developed a four-step process, which he calls Nonviolent Communication (NVC), and which provides a structure as well as a framework for empathic communication.

Nonviolent Communication focuses on:

- accurate perception,
- effective expression of our needs and the aspects of ourselves that alert us to those needs,
- the discovery of wise strategies to meet our needs in a balanced way with those of others,
- recognition of the shared, universal emotions and needs that bond all human beings.

One of the major benefits of using NVC is that it reinforces the fact that all humans relate to the same universal set of feelings, which provides a foundation for understanding based on shared experience. Though any particular feeling may be triggered in one person by different stimuli than trigger that same feeling in someone else, mostly everyone can relate to the simple fact of another person’s experience of any particular feeling. So when people are engaged in communications that are aimed at connecting with others or that involve delicate personal topics, they are more likely to succeed in gaining understanding by opening up vulnerably about their shared human emotions than by explaining their thoughts. While thoughts certainly play an important role in people’s lives and their expression is very useful in many settings human bonds more powerfully built through feelings rather than thoughts. When people express their thoughts, these thoughts are also products of the speaker’s culture.

As is the case with feelings, human needs are, for the most part, shared universally, so they also offer a crucial source of common ground on which to build understanding. While various people or those in different cultures may employ vastly different strategies or use different resources to meet the same

need, most people can relate to the shared needs themselves, regardless of their cultural backgrounds.

For over two decades Rosenberg has been practicing NVC as a mediator in many conflict-ridden areas such as the Middle East or former Yugoslavia in the 1990ies. The process he created is helping him to overcome cultural barriers and create understanding between different cultures. Thus, it may be assumed that NVC in combination with basic skills of intercultural communication will be helpful for doctors in establishing the kind of relationship with their patients which is required to re-activate the self-healing powers.

Implementation and its Obstacles

There is a good reason why the problem of the suppression and/or the re-activation of the self-healing powers of a patient is still not recognised and addressed, neither in our medical schools nor in the practice of medicine. This drastic change of approach would cause considerable problems within the present medical systems in the western industrialised countries (Sobel, 2000).

The re-activation of a patient's self-healing powers requires an in-depth knowledge of this person's biography. The attending doctor needs a fair amount of time to find out what a patient has experienced, and which ideas and convictions, which stances an mind-sets resulted from these experiences. This process can only take place, when there is personal relationship between the doctor and his or her patient, which is characterised by mutual trust. This can only develop when the doctor meets the patient on equal terms, with genuine interest, openness, and appreciation, unimpaired by diagnoses or material matters. This is vital for the doctor to succeed in inviting and encouraging the patient to be open and ready for new experiences. The patient has to let go of presently widespread false expectations and negative prejudice. The doctor, in turn, would have to overcome obsolete self-concepts as well as premature judgements and evaluations. What it really takes is sincere empathy and an understanding of the patient's situation.

Doctors work under cost and time pressure, in a system which compels them to diagnose and classify, and which makes it necessary for them cover themselves legally. They do not know enough about the principles of salutogenesis. At present, these are critical factors, which keep doctors from focussing on the re-activation of the self-healing powers of their respective patients.

Yet, there is still hope that the situation is about to change. On the one hand, there is a whole range of medical-therapeutic disciplines, comprising mind-body-medicine as well as naturopathy, which are explicitly geared towards the re-activation of the their patients' self-healing powers. On the other hand, the increasing cost pressure within our health care systems will force us to search for additional cost saving potential – neglected so far – in the field of medical long-term treatments. To state that the enormous cost-saving potential, which

lies in a more sustainable and effective re-activation of the patients' self-healing powers cannot be overlooked any longer, is a reasonable prediction.

References

- Astin, J. (1997). Stress reduction through mindfulness meditation. Effects on psychological symptomatology, sense of control and spiritual experience. *Psychotherapy*, 66, 97-106.
- Antonovsky, A. (1987). *Unraveling the mystery of health. How people manage stress and stay well*. San Francisco, London: Jossey-Bass.
- Bates, D. G., & Plog, F. (1976). *Cultural Anthropology*. New York: McGraw-Hill.
- Benson, H. (1976). *The relaxation response*. New York: Avon Books.
- Davidson, R. et al. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosom Med*, 65, 564-570.
- Dörner, K. (2003). *Der gute Arzt. Lehrbuch der ärztlichen Grundhaltung*. Stuttgart: Schattauer.
- Dusek, J. A., Chang, B. H, Zaki, J., Lazar S. W., Deykin A. & Stefano, G. B. (2005). Association between oxygen consumption and nitric oxide production during the relaxation response. *Medical Science Monitor* 12, 1-10.
- Hall, E. T. (1989). *The Dance of Life*. New York: Random House.
- Hallenbeck, E. (2006). High context illness in a low context medical world. *American Journal of Hospice & Palliative Medicine*, 23, 2.
- Hüther, G. (2004). *Die Macht der inneren Bilder*. Göttingen: Vandenhoeck & Ruprecht.
- Hüther, G. (2006). Wie Embodiment neurobiologisch erklärt werden kann. In: M. Storch, B. Cantieni, G. Hüther, W. Tschacher, *Embodiment – Die Wechselwirkung von Körper und Psyche verstehen und nutzen* (pp. 73-98). Bern: Huber.
- Kabat-Zinn, J., Lipworth, L., Burney, R. & Sellers, W. (1986). Four year follow up of a meditation-based stress reduction program in the treatment of anxiety disorders. *Psychiatry* 49, 936-943.
- Michalsen, A., Grossman, P., Lehmann, N., Knoblauch, N. T. M., Paul, A., Moebus, S., Budde, T. & Dobos, G.J. (2005). Psychological and quality of life outcomes from a comprehensive stress reduction and lifestyle program in patients with coronary artery disease. Results of a randomized trial. *Psychotherapy*, 344-352.
- Miller, W. R. (2002). *Motivational interviewing, Preparing people of change*, 2nd edn. New York: Guilford Press.
- Ockene, et al. (1988). Benefits and costs of lifestyle-change to reduce risk of chronic disease. *Preventive Med.* 65, 224-234.
- Ornish, D., Scherwitz, L.W., Billings, J.H. & Gould, K.L. (1998). Intensive lifestyle changes for reversal of coronary heart disease. *JAMA* 16, 280, 2001-2007.
- Rees, J. L. (2008). Evidence and the Industrialization of Medicine. *Clinical and Experimental Dermatology*, 33, 390-393.
- Rogers, C. R. (1959). A theory of therapy, personality and interpersonal relationships, as developed in the client-centered framework. In: S. Koch (Ed.), *Psychology: A study of science* (Vol. 3, pp. 210-211; 184-256). New York: McGraw Hill.
- Rosenberg, M.B. (2003). *Nonviolent Communication – a Language of Life*. Encinitas, California: Puddledancer Press.
- Sobel, D. S. (2000). Mind matters, money matters: the cost-effectiveness of mind-body-medicine. *JAMA* 298, 1705.