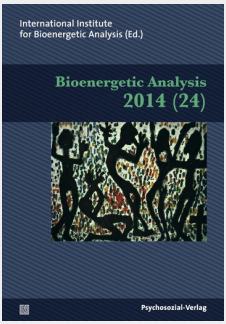
Thomas Heinrich

Yawning



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Yawning

Grounding by the Inner Stretch Pattern

Thomas Heinrich

To Willi Liebe and Henry Meinhard
In Memory of David Campbell and June McDonnach[1]

Abstracts

Alexander Lowen emphasized the importance of changes in the body as a main goal of a body oriented psychotherapy. He focused especially on breathing and vibrating as involuntary movements and keys of changing and supporting a person's grounding. Although yawning as another involuntary movement that shows a lot of changes on a body level, it is not in the center of Bioenergetic work yet. In my practice, yawning became an important and welcomed sign of therapeutic process and development which helps guide me through Bioenergetic sessions.

The article will give some information about the current scientific findings and neurobiological aspects of yawning. A little study according to a simple yawning exercise gives data of self-experience of participants. Following phenomenological methods, new hypotheses of the reason and the purpose of yawning are presented. Some therapeutic implications, such as how the yawning of the client and of the therapist can be used in the process of a body-oriented psychotherapy, conclude the paper.

Key words: yawning, Bioenergetic Analysis, parasympathetic nervous system, dura mater, Turgo effect

1 I have to thank Angelika Wenzel-Mentrup a lot, who helped me to bring this article in a receptible form and my partner Bernhard Meier, who supported me a lot during the time of preparing the presentation and the article.

Das Gähnen (German)

Alexander Lowen betonte die Bedeutung von körperlichen Veränderungen als ein zentrales Ziel einer körperorientierten Psychotherapie. Er legte dabei besonderes Gewicht auf die Atmung und die Vibrationen als unwillkürliche Bewegungen und Schlüssel für Änderung und Verbesserung der Erdung einer Person. Obwohl Gähnen eine weitere unwillkürliche Bewegung ist, durch die sich vieles auf der Körperebene ändert, ist es bisher nicht im Bioenergetischen Arbeiten angekommen. In meiner Praxis wurde Gähnen ein wichtiges und willkommenes Zeichen des therapeutischen Prozesses und der psychischen Entwicklung, das mir Orientierung in Bioenergetische Sitzungen gibt.

Der Artikel informiert über den aktuellen Stand der wissenschaftlichen Ergebnisse und neurobiologischen Aspekte des Gähnens. Eine kleine Studie über eine einfache Gähnübung fügt Erkenntnisse aus einer Selbsterfahrungsgruppe hinzu. Phänomenologischen Methoden folgend werden neue Hypothesen über die Gründe und Zwecke des Gähnens entwickelt. Einige therapeutische Implikationen, wie das Gähnen der Klient_innen und Therapeut_innen in der körperorientierten Psychotherapie genutzt werden kann, beenden diesen Artikel.

Le bâillement (French)

Alexander Lowen a souligné le fait que l'un des objectifs fondamentaux de la thérapie psychocorporelle concernait les changements intervenant au niveau du corps. Il s'est particulièrement centré sur les mouvements involontaires tels que la respiration et les vibrations, essentielles pour qu'une personne développe puis entretienne sa capacité d'enracinement. Bien que le bâillement soit également un mouvement involontaire et qu'il soit suivi d'un ensemble de changements au niveau corporel, il n'est pas encore au centre de la pratique bioénergétique. Dans ma propre pratique, le bâillement est devenu un signe important et de bienvenue concernant le processus thérapeutique et son développement, un signe m'aidant et me guidant au fil des séances de thérapie.

Les résultats scientifiques actuels et les aspects neurobiologiques concernant le bâillement sont décrits dans cet article. Une petite étude présente ensuite les données d'une expérience vécue par des participants à la suite d'un simple exercice de bâillement. Puis de nouvelles hypothèses phénoménologiques envisagent les motifs à l'origine du bâillement ainsi que ses buts. Enfin, quelques perspectives thérapeutiques, telles que la manière d'utiliser le bâillement du client ou du thérapeute au sein d'un processus thérapeutique psychocorporel, concluent cet article.

El Bostezar (Spanish)

Alexander Lowen destacó la importancia de los cambios en el cuerpo como el objetivo principal de una psicoterapia corporal orientada. Se centró especialmente en la respiración y la vibración como movimientos involuntarios y claves para el cambio y apoyo del arraigo de una persona. Aunque el bostezar es otro movimiento involuntario que muestra muchos cambios al nivel corporal, todavía no se considera un aspecto central en el trabajo bioenergético. En mi consulta el bostezar se convirtió en un símbolo importante y bienvenido en el proceso terapéutico y de desarrollo que me ayuda como guía en las sesiones bioenergéticas.

El artículo le proporcionará información sobre los hallazgos científicos actuales y los aspectos neurobiológicos del bostezar. Un pequeño estudio relacionado con un simple ejercicio del bostezar aporta datos de la experiencia personal de los participantes. Siguiendo los métodos fenomenológicos, se presentan nuevas hipótesis acerca de la razón y el propósito del bostezar. El ensayo concluye que ciertas implicaciones terapéuticas, tales como el bostezar del cliente y del terapeuta se pueden utilizar en el proceso de una psicoterapia orientada al cuerpo.

Sbadigliare (Italian)

Alexander Lowen ha sottolineato l'importanza dei cambiamenti nel corpo come principale obiettivo di una psicoterapia corporea. Si è concentrato soprattutto sulla respirazione e sulle vibrazioni come movimenti involontari e chiave di cambiamento e sostegno al grounding.

Benché lo sbadiglio sia un movimento involontario che evidenzia molti cambiamenti a livello corporeo, non è ancora centrale nel lavoro bioenergetico. Nel mio lavoro di terapeuta, lo sbadiglio è diventato un segnale importante e ben accolto del processo terapeutico e del suo sviluppo e un'utile guida nelle sedute di bioenergetica.

L'articolo fornirà alcune informazioni sulle attuali conoscenze scientifiche e sugli aspetti neurobiologici dello sbadiglio. Un piccolo studio su un semplice esercizio di sbadigli fornisce una conoscenza sull'esperienza di sé dei partecipanti.

In base a metodi fenomenologici, sono presentate nuove ipotesi della ragione e dello scopo degli sbadigli. Concludono il saggio alcune implicazioni terapeutiche, come per esempio quanto lo sbadiglio del paziente e del terapeuta possono essere utilizzati nel processo di psicoterapia ad orientamento corporeo.

Bocejando (Portuguese)

Alexander Lowen enfatizou a importancia de mudanças corporais como o objetivo principal da terapia baseada no corpo. Ele enfocou principalmente a respiração e a vibração como movimentos involuntários, e chaves da mudança e do apoio ao grounding.

O bocejo, como qualquer outro movimento involuntario expressa muitas mudanças a nível corporal, no entanto ele ainda não é central no trabalho corporal. Na minha pratica, bocejar se tornou um sinal importante e benvindo no desenrolar do processo terapeutico, e tem ajudado a me conduzir durante as sessões de bioenergética.

Este artigo traz algumas informações sobre as atuais descobertas científicas e aspectos neurobiológicos do bocejar. Um pequeno estudo sobre um simples exercício de bocejar nos oferece dados da experiencia pessoal dos participantes. Seguindo os métodos fenomenológicos, novas hipóteses sobre o significado e o propósito do bocejar são descritas. Como conclusão, são apresentadas algumas implicações terapeuticas, tais como, de que maneira o bocejo do cliente e o do terapeuta podem ser usados no processo de uma terapia corporalmente orientada.

1. Introduction

Bioenergetic Analysis came to my attention as an approach following the research and therapeutic work of Wilhelm Reich, about whom I had to present a paper during my study of Psychology at the University of Koblenz-Landau/Germany in the early 1990s. Reich's approach of a body oriented based psychotherapy fascinated me a lot. It evoked my curiosity about the connections between soul and body, or to speak more precisely, the connections between the psychological and physiological processes in humans.

Starting with my own Bioenergetic Analysis in 1992, I always remained curious at the impact of responses of the autonomic nervous system in the therapeutic process. But it took me another decade before I had my first orgasm reflex during my own Bioenergetic therapy. This happened when I worked with my Bioenergetic therapist, Willi Liebe, who gave me a special deep tissue massage, called Body Soma, taken from the work of Ida Rolf.

In 1990 I started to give workshops in bodywork, which I first co-led and later on led with Henry Meinhard. Giving these workshops, for the first time yawning became an issue: At the beginning of the workshops we invited the participants to yawn at any time they felt the impulse to do so. The reason, we knew at that time was that

yawning releases the masseter, which was thought to be the leading muscle for the voluntary movements. To let go this muscle should improve involuntary movements. Involuntary movements were supposed to be induced by the autonomic nervous system. The following yawning should be a way to change the processes on that level during bodywork.

At the preconference workshop of the International Conference of the IIBA in Buzios in 2009, Heiner Steckel quoted Alexander Lowen that a process in therapy should have to show a difference on the breathing and the vibrating level, otherwise it won't be sustainable. This was a good summary of Lowen's approach and a helpful orientation in my work in the following years.

Working with Bioenergetic analysis since 1997, I have a special focus on the signs of the autonomic nervous system. I have observed quite frequently, that clients start to yawn during a session. If they start to do so, they don't yawn only once, but a couple of times. Sometimes they yawn half a session or even longer. Some clients start to yawn when they enter my office and some of them report that they start yawning even earlier, while preparing themselves for the upcoming Bioenergetic session.

After yawning, clients feel calmer; conflicts aren't as dramatic as before. In the following time, I started to suggest an exercise of yawning to a client, if he or she seems to be under stress, and I prove similar effects as observed before with others.

But yawning didn't start only in clients during the Bioenergetic sessions. It happened to me as a therapist as well, that I got impulses to yawn during the sessions. After a period of trying to suppress these impulses, I brought my impulses into the sessions. So I found out, that I got those impulses usually, when the client didn't breathe in a proper way.

In the following time I started to examine the issue more scientifically. My aim was to understand more clearly the meaning of yawning in the Bioenergetic process, that we can use it at best as a method as part of our conceptual work as Bioenergetic therapists. My findings will be the content of this article.

First, I will present the results of the scientific research on yawning, followed by a little study done by my own in a Bioenergetic workshop, which includes a little exercise for the Bioenergetic work on yawning as well. After this, I will develop a new hypothesis on the meaning of yawning, which I built upon my more phenomenological analysis of the yawning movement. The end will be heralded by some therapeutic implications on yawning.

I hope this article can demonstrate how the current ideas of Helen Resneck-Sannes, Margit Koemeda-Lutz and Bob Lewis, presented in last year's issue *Bioenergetic Analysis,* about combining neuroscientific knowledge with Bioenergetic work can be transmitted into single practical issues (2012).

2. Theories and Research on Yawning

Descriptive Aspects of Yawning

Coming from a phenomenological view on science, developed by Edmund Husserl (1859–1938) (Lamnek, 1988; Graumann & Metraux, 1977), it is remarkable that the descriptions of the movement of yawning in scientific literature vary a lot. There is Andrew C. Gallup's very short characterization of yawning "by a large gaping of the mouth and eye closure, accompanied by a deep inhalation of air and a shorter expiration" (2010) on the one end. A lot of other authors follow, who add different single aspects to the latter. On the other end, one of the most comprehensive definitions of Gregory T. Collins and Jose R. Eguibar concludes the row.

Collins and Eguibar integrate definitions of different authors to:

> "Yawning is a phylogenetically conserved behavior ... defined as a paroxysm of the respiratory circle characterized by a standard cascade of movements over a 5- to 10-second period with 3 distinct phases. Yawning is initiated by a wide opening of the mouth with an ample, slow and deep inspiration, followed by a brief interruption of ventilation fluxes once the thorax is full (the so-called acme state, which is often accompanied by limb stretching and eye occlusion) and concluding with a short expiration, accompanied by the relation of all participating muscles. In the case of humans, yawning is also accompanied by a great expansion of the pharynx and larynx and a maximal abduction of the vocal cords, with inspiration occurring essentially through the mouth. Although the duration of a yawn in a given individual appears to be fixed, it can be modulated voluntarily. Furthermore, it is important to note that yawning is also accompanied by an opening of the eustachian tubes, a brief lowering of hearing acuity as well as the opening of the stomach cardia resulting in an influx of intragastric air that is responsible for the sensation of abdominal fullness occasionally associated with yawning. Thus yawning should not be thought of simply as the opening one's mouth, but rather a generalized stretching of muscles, particularly those of the respiratory tract, such as the diaphragm, intercostals, and those of the face and neck" (2010).

But even this definition is not complete. For example, Phoenix and Chambers observed that during yawning a spontaneous penile erection can occur (1982), which inspired some researchers to think about the connection between yawning and sexuality (Seuntjens, 2010).

In addition, yawning is not only a movement in humans, but also in all mammals, probably *in all vertebrates* (Walusinski, 2010a). It can even be observed in fish.

The *first yawns* in life show up between 12–14 weeks' gestational age (de Vries, Visser & Prechtl, 1982). With approximately 25 vs. 7–8 times per day, yawning is significantly higher in preterm infants during the final weeks before term age than in adults (Baenninger, Binkley & Baenninger, 1996). In babies, yawning is often an isolated event and not integrated in more complex movement activities. This is appropriate to the developmental stage of the nervous system at that age (Giganti et al., 2002). Occurring more rarely in the first years of life, the yawning rate increases, when children start kindergarten, and becomes even 5 times more, when they start school life (Koch, Montagnier & Soussignan, 1987). The last increase is seen due to the learning process of writing and reading (Chouard & Bigot-Massoni, 1990).

The *mean frequency* of yawning in adults is about 7–8 times per day, half of them before and half of them after sleep. This mean number of yawning differs a lot between individuals (0–24 times per day), which seems to be dependent on sleeper types: the frequency of yawning is increased in long sleepers (Giganti & Salzarulo, 2010) and evening sleeper types (Zilli, Giganti & Salzarulo, 2007).

During adulthood the frequency of yawning decreases again. Zilli, Giganti & Uga found a decrease of the yawning in the morning and the mid-afternoon in elderly (2008).

The *circadian rhythm* of 7–8 yawns per day is distributed even 4 times before and 4 times after sleep. That makes approx. 232.000 in a whole life. There is a *gender issue* in animals (male macaques yawn twice as often as female (Shino & Aurelli, 1989), but not in humans.

Yawning has a *social issue*. In the most cultures yawning is not socially accepted. In western culture, a yawning person is seen as being tired or, even worse, impolite because showing to be bored by the counterpart. In Arabic culture, yawning helps Satan to enter the body, while in India, bad spirits are seen as doing the same (Walusinski, 2010c). Also in Japanese culture, yawning is improper. In South America, other parts of Asia and Central Africa, yawning seems to have a more positive connotation: if somebody yawns there, it means another person is thinking about the yawner.

Yawning is *contagious*. From age 4, human beings can be influenced to yawn, if another person is seen or heard yawning (Anderson & Meno, 2003). So this happens even to blind people, but autistic or schizophrenic people are not contagious about yawning. Contagious yawning is not limited to species: even dogs are contagious to the yawning of their master (Joly-Mascheroni, Senju und Shepherd, 2008)

Giganti and Salzarulo differentiate the spontaneous yawning from the contagious *type* and found hints that the origin of those types must differ too (2010). There is voluntary yawning as a third type of this pattern: Like breathing we can surrender

to the spontaneous or to the contagious movement or on the other hand evoke the movement consciously.

Today, the *neurohormonal base* of yawning appears to be established following Walusinski. He understands yawning as a marker of activity in D_3 dopamine receptors (2010b). Especially the hypothalamus, mainly its paraventricular nucleus, is involved in triggering yawning (Giganti et al., 2010; Collins & Eguibar, 2010). The neurotransmitters, which work in yawning, are the same as those that influence emotions, moods, and the appetite as hormones.

A dose-dependent increase on ACTH, α-MSH, Oxytocin, Acetylcholine, Nitric Oxide, excitatory amino acids or glutamate increases the frequency of yawning.

A dose-dependent increase of endorphin or GABA decreases it.

A dose-dependent increase of Serotonin, Dopamine or Adrenergic agonists can result either in an increase or decrease of yawning – depending of its different receptor types (Collins & Eguibar, 2010).

Collins & Eguibar point out that there are "3 distinct neural pathways involved in the induction of yawning, as well as the hierarchical order through which these different neurotransmitter systems interact to regulate yawning" (p. 90). Oxytocin and Acetylcholine seem to be in a higher position of controlling the yawning process (2010).

It is not clear yet, if these distinct pathways have a connection to the different types of yawning, i. e. spontaneous, contagious or voluntary.

Theories on Yawning

For sure, yawning has a function. Otherwise, we wouldn't have developed such a complex program during our phylogenesis. But beside the previous findings of the scientific research over the last decades, the *purpose* and the origin of yawning are not discovered yet. There are some theories about them- some of them proved negative, some with some evidence. And the purpose of yawning might probably not have one cause.

Disproved theories:

- Yawning increases the oxygen level in the blood

  Robert Provine refuted this thesis by Hippocrates wrong: A higher level of carbon dioxide in the air given by a breathing mask improves the rate of breathing, but doesn't improve yawning, as more oxygen diminishes the breathing rate, but doesn't diminish the yawning rate (1987).
- Yawning wakes up the brain, i. e. increases brain or autonomic activity

Guggisberg et al. proved this thesis wrong: People in a dark room yawn more, but are not more awake or feel less sleepy after yawning (2007).

Guggisberg, Mathis & Hess didn't find either any specific autonomic activations or increased arousal levels after yawning in their supervision of articles to that issue. So they conclude that the data do not support an arousing effect of yawning or a role in regulation of vigilance or autonomic tone (2010).

Current theories:

- Thesis 1: Yawning is a sign of sleepiness in the sleep-wake transitions and modulates the arousal processes

  Almost all authors refer to this thesis with a lot of proofs and no counter-evidence till today. Their definitions aim at the neuromuscular aspect of yawning, which leads today's paradigm on yawning (Walusinski, 2010b, Giganti & al., 2010). Nevertheless, it is not clear why there is not only yawning when getting tired, but also when waking up. In addition, it remains unclear why yawning in the morning is usually combined with stretching and yawning in the evening is not (Provine, 2005).
- Thesis 2: Yawning eliminates the difference between pressure of the inner and the middle ear

  Travelers by plane yawn during landing to open the Eustachian tube. So it might be one function of yawning to eliminate the difference of pressure in the inner and the middle ear.
- Thesis 3: Yawning cools down the brain

  Gallup and Gallup illustrated that persons with a cooling compress on the forehead or during nasal breathing are less contagious to yawning persons on pictures than persons without (2007). So they built up the hypothesis, that yawning helps to cool down the brain, if the cooling mechanisms by blood circulation and nasal breathing aren't enough. Shoup-Knox et al. could demonstrate that the brain of a rat is 0,12°C warmer before yawning and the same amount lower after it (2010), which would be 25% of the circadian variance in brain temperature among humans. Even though there is ongoing evidence for this hypothesis (Corey, Shoup-Knox et al., 2012), there is no proof either that the temperature of the brain itself is cooler during this experiment, or that the blood flow in the brain is quickened by yawning.
- Thesis 4: Yawning occurs when boredom is rising.

  Robert Provine could prove that boring texts facilitate yawning (1986).
- Thesis 5: Yawning helps with handling psychic tension/stress

  There is anecdotal evidence that people dealing with tension caused by challenges, such as high performance athletes or parachutists, yawn more before coming into action. But also hosts of a dinner party use yawning. It helps them

to keep their level of arousal higher, when they get tired and can't go to bed because of their guests (Dumpert, 1921, Seuntjens, 2010).

- Thesis 6: Yawning is a kind of social communication: "I am hungry!"; "I want you to leave!"; "Your presentation should come to an end!"

  Macaque alpha-males yawn after conflicts with other male animals, as if they want to communicate: "There is no reason to be preoccupied. All is fine" (Paulkner & Anderson, 2006).

- Thesis 7: Yawning is contagious to empathetic persons

  As mentioned above, children start to be able to yawn and to be empathetic at the same age of 4. (Anderson & Meno, 2003). Findings in neuroimaging of contagious yawning support this thesis. In his analysis of the current studies in this field, Platek comes to the conclusion that, "each study shows activation in cortical association areas that have been indirectly linked to theory of mind and/or self-processing" (2010, p. 110).

- Thesis 7: Yawning harmonizes groups

  An important issue is referred to by Karl von den Steinen (1855–1929). Following Eibl-Eibesfeld, von den Steinen described in a book published in 1892 the observed behavior of the Baikiri, a tribe in Central Brazil, "If they seemed to have had enough of all the talk, they began to yawn unabashedly and without placing their hands over their mouths. That the pleasant reflex was contagious could not be denied. One after the other got up and left until I remained with my dujour" (1975). This anecdote assumes that yawning helps to synchronize a group to strengthen the bonding in a group.

The latter thesis shows the social aspect of yawning, which contrasts with the first ones concerning the organic level. But giving an overview on all these theses, it seems that yawning creates balances:

- An inner organism balance of physical forces like pulls or trains and pressures, of metabolic regulation, e. g. of different neurotransmitters, temperature of the brain, sleep-wake transition or sleepiness.
- An inter organism balance of interpersonal tensions, different moods and impulses like it is known in Bioenergetic Analysis as attunement.

3. Study Including an Exercise on Yawning

In a Bioenergetic workshop for gay men in spring 2013, 8 participants were asked to answer some questions about their experience before, while and after a little exercise on yawning.

The exercise is an effective therapeutic intervention, because of its developing yawning reaction and therefore because of the benefit in wellbeing and body awareness within the clients. It starts with a body perception, which takes almost 5 minutes, while lying on a mattress following the questions below, asked by the therapist:

- How is your contact with and the *support* from the floor?
- How deep do you feel the *breathing* movement in your body?
- What kind of *other sensations* do you have inside your body?
- How do you perceive the *surroundings*?
- What kind of *thoughts* are passing through your mind?
- What kind of *mood or emotion* are you in at this moment?

Then, the clients are invited to explore what happens if they open the mouth widely and inhale deeply. If they start to yawn, they shall stay with that and wait for an ongoing yawning process. If not or if the yawning stops after the first movement, they can try to repeat the little exercise with the next impulse to breathe in: to open the mouth widely and inhale deeply.

The following questions can be asked by the therapist to guide the client's perception during the exercise:

- Which parts of the head are involved in the movement?
- Which parts of the neck and the shoulder girdle are involved?
- Which parts of the chest are involved?
- Which parts of the belly are involved?
- Which parts of the pelvis are involved? (This question wasn't asked during the study.)
- Do you feel effects of the movement elsewhere?

This part takes another 5 minutes. Afterwards, the clients can be asked the questions about their body perception from the beginning again.

Results

As mentioned above, the participants of the workshop run through the previous exercise. The participants answered the questions according to their experiences before and after the exercise by paper and pencil directly afterwards. The summarized and translated statements are listed in tab. 1).

Level	Before	After
Body in general	Lower and upper back are pressing steeply on the floor	Body rests in total on the floor
	Belly is up	Lot of activity in the belly
	Tensed	Very relaxed
	Heavy pelvis	Lighter in total
	Cold feet	
	Slightly relaxed	
	Pelvis, shoulders strong	Pelvis, shoulders more evenly, till to the hands perceptible, easy perceptible 1 arm, 1 leg
		Back, legs and heels are heavy, placed "deeply" on the mattress
	Heavy pelvis and head	Body feels evenly heavy, weight is distributed evenly
Support	1. Hips, 2. Shoulders, 3. Head	Body as a whole, feet and arms very heavy
	Head, Pelvis, No support: feet/thighs, lower leg, spine	Ribcage, thighs, weight of the whole body evenly on the floor
	Heavy head, light feet	
Breathing	Till the lungs/upper belly	Till the abdomen
	Column fill to the navel	Ribcage in total, apexes of the lungs fill to the pubic bone
	Only fill to the stomach	Deeper
	Lower back pain	Even relaxation, all evenly heavy, relaxed jaw
	Arm	Belly, shoulders – arms
		Floats till the thighs
Other sensations	Green	Blue
		More in one
		More than nothing
	Slightly separated areas	Balanced, complete, swinging hydraulically
Emotions/ mood		Serene
	Neutral till grey	Welfare/green
	Welfare, warm	Alive, awake welfare
Thoughts		No spinning head
	Some thoughts	No thoughts
	In the here, with the exercise and in the following week	Totally with me
	Distracted	With my cold feet
	Effort, rising terrain	Why is yawning considered as a bad style?

Tab. 1: Summarized and Translated Statements of Bioenergetic Clients during the Yawning Exercise

During the process of yawning three participants described the following sensations:

- Opening of the sinuses, flow of nasal mucus
- Eyes are watered and nose is running
- Vibrating chest and belly

To make it clear: This little study doesn't claim to be an experiment following statistical standards. There is more missing than a control group. But it can give a first impression of the effect of yawning on a level of self-experience. In sense of the phenomenology of the perception of Merleau-Ponty (Herzog, 1992), these data are on a corporal (body) level and therefore important for developing an hypothesis.

Summarizing the data according the principles of quality content analysis (Mayring, 1993), it becomes clear, that the participants felt more relaxed, even in a weight perspective, which allows the conclusion *on a body level*, that yawning helps to get more grounded, i. e. to reduce the tonic function of the muscles. This is confirmed by the description of a deepened breath. This does not have to mean that there is a bigger oxygen supply now, but the stretching of the breathing muscles might make them function better, so breathing is balanced and needs less effort.

On an *emotional level* or level of mood, the men felt more (of a positive) welfare, in a more vivid sense, which could be a hint, that the distribution of tension and blood circulation is harmonized, probably in the whole body. This could be provoked by less difference of tension in the muscles and the fascia, where the receptors of muscle spindles and Golgy receptors are located – the interoceptive organ.

The descriptions of the *cognitive level* show a slowdown of the activity in the frontal cortex. This is the part where our conscious thinking takes place.

4. New Hypothesis on the Meaning of Yawning

Looking on the definitions of yawning, even the one of Collins and Eguibar (2010) seems to me that even some anatomical and physiological aspects are missing. The approach of phenomenology taught me to look very openly at people, things, and other issues in the world, trying to forget the knowledge and theories about the object. Eidetical reduction of its aspects helps later to find the essence (Wesensschau)(Lamnek, 1988).

Being more open with the perception of the yawning movement, it contains not only the movements which are listed by Collins and Eguibar (2010). In addition, the eyes get watered. But this doesn't happen during a strong closing of the eye alone, pressing the lids together, but during a single whole yawning movement. A running

nose might be a result of the same process; the watering of the mouth by the parotid gland during yawning is another issue. So yawning doesn't seem to be restricted on the neuromuscular system, but seems to have effects also on the gland system.

Since yawning is a phylogenetic induced process, we have to suppose that yawning has an important function. Checking the innervations of the involved muscles and glands, it gets clear that they are all enervated by the entity of nerves which don't come out of the vertebrae, but of the brain itself, particularly the brain stem. These so called cranial nerves are forming the upper parasympathetic branch of our autonomous nervous system (PSNS).

While the movement pattern of yawning seems to be the reaction of the firing of the upper parasympathetic pole, the vagus nerve as one of those nerves enervates the inner organs of digestion. Colling and Eguibar (2010) pointed out, that even the opening of the stomach cardia is part of the yawning process. The sensations of the participants self experience in the little study haven't been found in any of the definitions about yawning. But their descriptions on the body and emotional level could be affected by the enervation of the vagus.

In addition, it is assumed that the lower pole of the PNS is involved into yawning too. In a self experiment, the beginning of the yawning movement can be perceived as an upcoming tension in the lower lumbar spine. This fits also the observed penile erection during yawning by Phoenix & Chambers (1982). As follows, yawning as a sign of parasympathetic innervations would restart even the organs of excretion and reproduction.

In summary, the yawning must be a sign for a strong parasympathetic enervation (often called a paroxysm, see for example, Collin & Eguibar, 2010), after having been sympathetically enervated before being quiet for a while. If this sign is repeated frequently like in a cascade, it is telling: now it is time to take a rest, to digest, refill the batteries.

This hypothesis isn't herewith contrary to the view of Guggisberg, Mathis & Hess (2010) that yawning doesn't play a role in regulation of vigilance or autonomic tone, as mentioned above. Parasympathetic activation is by itself an activation and not a lack of activation, as can be seen in a full yawning, which activates almost the whole body. Of course it is to be proven, but it is also to hypothesis, that after a longer cascade of yawns, there might be found a difference in muscular tension or breathing volume.

Another aspect of yawning was started by professional singers. For them, the purpose of yawning is self-evident: Singers use the opening function of yawning to find more resonance in the sinuses of the head. Observing precisely, the tensing of the neck muscles in the back and of the laryngo-pharyngeal muscles in the front, during the yawning movement, seem to have a sucking effect on the cavity of the head. As

follows, the head gets more volume. In order to increase the volume of the head, the sutures of the skull must move. According to school medicine, this isn't possible, because the sutures are grown together and don't move at all after age one. But it seems that yawning has an opening effect even on these sutures, so Osteopaths and Rolfers® in contrast to school medical doctors work on these sutures and seem to be able to move them effectively.

Considering the breathing aspect of yawning, it seems that probably all muscles for the movement of breathing-in are included. Of these, the scalene muscles, the sternoclydomastoid, the pectoralis minor, the external intercostals are lifting the ribs. In turn, this lifting of the ribs opens the space between the vertebrae, which elongates the thoracic spine in the long run. The diaphragm and its posterior part, the crura, pursue the yawning movement further down to the belly and the lower abdomen, by pressing the visceral organs there to the front, which is sensible during yawning too, if one's awareness is focused on these parts too.

If stretching in a lolling or pandicular manner and yawning is going on together often at least in the morning, there could be a similar purpose in both. We loll our body to make our extremities longer, which means we stretch first of all our muscles and myofascial web. During history, mankind developed different systems to perfect this stretching as, for examples Yoga or Bioenergetic stretching exercises. If this lolling kind of stretching helps us to regulate our tension in the superficial layers of our body, why shouldn't yawning do the same on a deeper level?

As we experienced, yawning has an effect on the muscles of the head, the cervical region, and the ribcage. By the strong contractions of their muscles, even the organization of the inner organs is influenced during yawning: The opening of the head by raising the roof of the mouth and simultaneously stabilizing the neck, refers an elongation or widening of the content of the cervical region and the skull. The lifting of the ribs elongates the thoracic spine and its contents too. The main contents of the skull and the spine are the brain and the spinal cord, which are enveloped by the dura mater, their connective tissue, which is part of the fascial web or fascial organ. The dura mater is fixed on several points in the cavity of the skull and the spine, this is the falx cerebri in the roof of the skull; at our third eye and on the opposite on the back; the occiput and finally at the foramen magnum. In the spine the cord is fixed at C2 and S2. At the level of S4, the dura mater exits the spine and is fixed around the coccyx. Following this, we could assume that yawning gives a stretching impulse at least to the upper and the middle part of the dura mater in the skull and between C2 and S2, which is the part of the spine where the sympathetic nervous system (SNS) leaves the spinal cord. Even this elongation is little compared to the stretch of the dura during bending forward as in the Bioenergetic elephant (elongation of the dura 2 cm)

or bending backward as in the Bioenergetic bow (elongation of the dura 7,5 cm). It might have an Turgor effect on the spinal cord by its repeated and autonomic manner. The Turgor effect describes an osmotic fluid exchange supported by pressure or pulling. According to Jean-Pierre Barral and Alain Croibier, longitudinal stretches of the dura mater can have these effects on nerves and also in the spinal cord. This movement can get important when the nerves get under compression due to mechanical forces, venous swelling, and psychological stress (1999). So the movement of the cavity of the brain and spinal cord could have a direct effect on the nervous system to harmonize its conditions of function.

But if we can consider that the brain and the nervous system are slightly elongated mediated by the dura mater and the spine, we can consider that even the connective tissue of the ribcage and of the lungs, the heart and the rest of the cardiovascular system of the chest is stretched by the deep inhale during yawning. The same is to be considered for the peritoneum and the connective tissue of the organs in the belly by the contraction of the diaphragm and the crura. So it is assumed that the organization of the inner organs in total is influenced during yawning.

This connective tissue or the fascial "organ" of our body has the function to give form or structure to the body, storing water, and preventing damage from the body by external forces. It consists of collagen fibers, which lengthen by the forces from outside, but not by itself as muscles can do. That means fascia is shrinking constantly. One sign of this process is the observable shrinking in elderly people, another that we feel immobile and shorter in the morning (after – almost – not having moved during the night), and a third that we can't move the whole range after being in shock or having to stay in bed over a longer period because of (for example) a disease. Moving ourselves helps us to get longer again. Lolling or stretching techniques help us to do this lengthening in a more precise and effective way. This would make it clear why we don't yawn only before going to bed. Yawning then helps to prepare the body for sleeping in a more balanced kind of state that improves the quality of sleep. But in addition, yawning in the morning helps us to balance the shrinking impact on the fascia during the night. Consequently, *yawning would be a vegetative response to the systemic shrinking of the visceral fascia of the three cavities of the human body as the stretching movement of pandiculation is for the myofascia of the extremities*.

Collagen fibers are not only produced and thrown out of the cells into the extra cellular space. They are especially built up around muscles, which have become a more tonic than a moving function. We as bioenergetic therapists work especially with these "frozen" muscles. So we have to consider the fact that the characteristic tensions in our body, which form our personal character structure, are more formed and held in the fascial web than in the muscular system. This might be an argument,

that people who are conscious about their own character structure and have worked on the different levels of emotions, relationships, and muscles, might not be freed in total on a body level but still feel restricted in their body. Yawning as a fascia related movement might change the inner parts of the character structures, if its potential input is raised up regularly.

If yawning reduces or balances the tension in the dura mater, it could be assumed that it also has an effect on the brain activity, which seems to be confirmed by the changes of the different hormones by yawning. So it could be assumed that a change in the fascial web could have a direct (by the Turgor effect) and indirect influence (by the brain) on the metabolic system as well. Even the thermoregulation of the brain could be a result of the stretch of the dura. Following Amontons' law about the relationship of pressure and temperature in chemistry, substances under pressure get warmer or in contrary, if the pressure decreases, substances get colder.

Arriving at thermodynamics we start to get into the field of somatic related energy, a home match of Bioenergetic Analysis: Yawning takes pressure out of the system, so it functions in a more fluid, less blocked way.

The change of mood or even emotions could be understood as the result of the widening in all the three cavities.

Of course, this hypothesis has to be proven as well.

To sum up, if the yawning movement is a sign of a change in the autonomic enervation from sympathetic to parasympathetic, whose purpose is to restore the organism, the effect of yawning would be the balancing of the tensions in the three body cavities and therefore a better functioning of the different life related functions of organism metabolism, reproduction, and growth.

To take a new look at the contagious aspect of yawning with these hypotheses, the presumed social purpose of yawning would be improved: In a sympathetic attitude vertebrates are in an awake or even alert state and can fight or flight in a split second. Communication in this state is characterized by goal-oriented and a more cognitive focused view on an issue. The switching of the autonomic enervation by yawning to a parasympathetic one starts a more relaxed and restoring state of being. Communication then is characterized by empathy and by a space giving peripheral views on an issue within a similar swinging or – as Bioenergetic therapists would call it – attuned vibrating dyad or group.

If the basic function of yawning is to lengthen and widen the visceral structures in our cavities on a body level and to harmonize and attune interpersonal behavior on a social level, it makes sense that working with yawning during Bioenergetic sessions should be very effective. The last section compiles a catalog of its therapeutic implications.

5. Therapeutic Implications of Yawning

Implications for the Personal Level of the Client

Following the above considerations, yawning during a Bioenergetic session helps to *balance* the client on a

- physical (balance of tension in the muscular and fascial system),
- neuronal (change from the SNS to the PSNS)
- metabolic physiological (balancing the levels of hormones and neurotransmitters) or energetic
- emotional and
- cognitive level.

Hence spontaneous yawning during a Bioenergetic session appears as a sign of release according to the current theme, which is being worked on. Perceiving yawning helps the therapist to orchestrate the session – knowing better when to set a pause or to go on.

Because it is a *natural process* to evoke a phylogenetic program, a client can provoke and use yawning easily, without learning a new choreography as body exercises normally are.

This is not only important to clients who have intellectual deficiencies. At least at the beginning of Bioenergetic therapy, a lot of clients don't have a good relationship to their bodies and they are not good in coordinating movements. Hence, complex exercises lead them into feelings of incompetence, which disturb their way toward joyful and trustful Bioenergetic work.

The Bioenergetic approach with its wide range of exercises and the will to change something on the behavioral, emotional and body level of the client runs the risk of giving permission to acting out. This is particularly dangerous in the work with clients with a narcissistic theme or a *psychopathic* structure. In the work with those clients, the proposal of exercises is often inadequate or even contraindicated. Yawning works here as an expression of "doing nothing", letting go, not controlling anymore. And it is normally not practiced by those clients! The lack of empathy which is sometimes found in those clients might let them yawn less. It can be assumed that provoking a yawn in the session can fill this deficit, as has been my experience in the work with those clients.

The work with yawning is very helpful too with clients who are *traumatized* strongly in their early childhood. They suffer from a strong sympathetic arousal, which is

covered and controlled by a parasympathetic freeze by a second arousal of the dorsal vagus nerve, the leader of the PNS in their body (Porges, 2003). This kind of a holistic tension, which includes all levels of the physical, metabolic physiological, emotional and cognitive can get a big relief by yawning. It helps here as a very effective stabilizer to find the way into the ventral vagal enervation again. As a genetic programmed pattern, this way is most easily accessible at any time. In a Bioenergetic session with traumatized clients, it can be used as a grounding exercise at the beginning of a session because of its effect of release and sensing weight, after which it is possible to work further on other themes.

The *inner stretch* function of yawning on the cavities has a deep impact on the whole system, although it is so simple. Following this connection and because of the effect on the *fascial net*, regularly reinforced yawning can change the character structure of the client – and of the therapist as well.

Implications for the Therapist-Client-Relationship

Because of its *empathetic* quality, the common yawning of client and therapist *attunes* them on a similar psycho physiological level, which is helpful to resonate and to understand each other on a body, an energetic and an emotional level, and in the long run probably even on a cognitive level.

Frequently done, this builds up a base of an egalitarian relationship, where the client can see the therapist's involuntarily impulses. Because the attunement does not only go one way, it is also a resource for the client to feel the therapists state of being, when she or he is in an PNS state, that is when she or he is relaxed and with less control. The yawning therapist is a good model for the client, to see how she or he can ground herself or himself, if there is too much tension.

Because of the *system* quality of a developed and bonded therapist-client-relationship, the yawning of the therapist can help the client to *regulate* his or her inner tension. This is well known in body therapies as HNC (human neuro cybrainetics) or in Rolfing® as Structural Integration. By repeated use, the client can learn to regulate her- or himself by yawning and in the long run by other tools.

Because of the empathetic quality of yawning, *impulses to yawn* in the therapist can be a sign of too much tension and of restrictions in the breathing pattern of the client, which can be worked on further.

Because of the *taboo* aspect of yawning, working with it and allowing it with at least Western, Arabian, Indian, or Japanese clients can be an opener to other themes around morality or prohibited actions like opening the voice, expressions

of fear, love/attachment, anger or to prohibited perceptions like weakness in the therapist.

The interpretation of the therapist's yawning by the client is a good source to work on the client's *transferences*. Does the client think that the therapist is bored, tired, or has suppressed anger, if she or he yawns?

The interpretation of yawning as a *counter transference* of being bored or getting tired as a defense mechanism of impulses of aggression have to be reflected very carefully according to the above explanations. Of course, these are possible inner psychological processes, but as found in other issues, the more simple solution, which the regulation function of yawning on a physiological level for systems in this case is, is usually the one which works.

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