

Sound induced and sound accompanied processes of consciousness

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Introduction

Relaxation techniques, therapeutic interventions or other methods use the power of sounds in various ways for the induction of altered states of consciousness. An overview of scientific studies regarding the effectiveness of music and sound therapy methods is provided by Leubner and Hinterberger (2017). In this article, we focus on the consciousness-altering effects of sound methods due to their structure. To make this easier to understand, we would first like to give a definition of the term "sound", which already contains important information about its effect.

Photo: Thilo Hinterberger

Sound – a definition

We hear a sound when something vibrating fades away. Compared to music, which contains a multitude of parameters, sound, as we prefer to define it here, is characterized by only a few acoustic properties such as a fundamental tone with more or less harmonic components in its frequency spectrum and a slowly decaying envelope, which is typical for sounds produced by singing bowls, gongs or cymbals. A gong, for example, has a very complex frequency spectrum containing harmonics. If this would not be the case it would be just perceived as noise. In contrast, the „sound“ of a drum might have a rather non-harmonic frequency spectrum and a steeply sloping envelope while the rhythm carries the stimulating information.

In this paper, we would like to focus on non-rhythmic sound interventions and consider the role of the characteristics of sounds. Nevertheless, the connection between tonal, rhythmic and physical elements such as breath or dance are important in transformative processes as well. Therefore, we also include the body's own rhythmic processes such as breathing into the description of sound interventions.

Sound applications

Sound meditation

The sound meditation depicts a meditation technique, which is exclusively based on the sounds of different singing bowls and not guided by words. Like in other forms of meditation (e.g. silence meditation and imaginative meditation), the element of silence is essential in a sound meditation. Here, the main characteristic of the sound is a soft touch and a long

decaying envelope. Initially, a sound inspires to eavesdrop, which leads to an increasing sensitivity enhancing being present in the silence at the end of each sound. The sound meditation can be performed in various physical positions and is also suitable as a group intervention. The live played sounds are particularly important for the presence in the moment because they invite the meditator to surrender to the indeterminacy of each moment. Sounds from recordings, however, convey an implicit knowledge of the predeterminacy of a sound, which reduces the aspect of that presence. Also, the naturalness with which the sound emerges in space is of utmost importance and cannot be easily produced by loudspeaker systems or headphones. The self-perception inside such an acoustic space can cause an expansion of consciousness and thus, creating a liberating experience. All in all, this results in a relaxation process that is characterized by increased sensitivity and presence.

Sound pauses

The sound pause is a short form of sound meditation lasting only two to five minutes. It is generally useful between mentally demanding activities such as at school, in meetings, discussion groups, etc. Besides the relaxing effect, a release and uncoupling from mental attachments can be achieved. This enables a short regeneration, mental freshness, combined with a neutralization of the mental sphere. During the sound pause, the sound can either only be heard as well as it can be felt, e.g. when a singing bowl is played on the palm of the hand.



The sounds of singing bowls, gongs or cymbals are typical for sounds with harmonic components in the frequency spectrum and a slowly decaying envelope.

Photo: Tina Buch

Sound massage

The above-mentioned aspects play an important role in the sound massage. However, here, the direct stimulation of the body constitutes an additional component of the sound experience as the singing bowls are placed and played on the clothed body. This method is usually performed in a lying position as an individual setting, in which the direct relationship between the sound generator and the client is much more emphasized. Here, too, there is a relaxation effect with increased sensitivity and presence. However, the participants report an increased feeling of connectivity, which can be explained on the one hand by the interplay of the simultaneous body sensation while the sound experience and on the other hand by the contact to the sound generator. Our own studies show a significantly increased effect regarding vitalization, balance and a more fulfilled feeling after a sound massage compared to a sound meditation.

Gong experiences

Here, the effective aspects of a sound meditation do also apply. However, the sounds of gongs differ significantly from those of singing bowls in terms of their frequency spectrum. Gongs have a very complex, mostly overtone-rich and partly non-harmonic spectrum, which can be very different depending on the strength and point of striking. Since gongs can be played very quietly as well as very loudly and with different techniques, e.g. rather pulsating as well as planar, there are various possibilities for the modification of consciousness.

When played softly, the gong experience is quite similar to that of a sound meditation with singing bowls. However, attention increases due to the complexity of the sound, possibly producing an effect on mindfulness than purely on relaxation.

On the other hand, with techniques playing the gong loudly, different principles apply resulting in distinct processes of consciousness. When large gongs – from about one meter in diameter – are played planar and at high volumes an acoustic overstimulation takes place, leading to an information processing overload due to the high complexity of the sound signal. All attentional resources are directed to the sound, wandering thoughts are hardly possible anymore, and the previous thought patterns and attachments can dissolve. The high sound pressures create an acoustically and physically intensive sound experience, which is sometimes described as overwhelming, dissolving or even destabilizing. However, this can lead to a liberated and neutral state of consciousness in the post resting phase.

The role of breathing

Eavesdropping implies perceiving the appearance of sounds and focusing on them as they fade away, which is a process quite similar to a mindfulness meditation, where attention is paid to the breath as it comes and goes. Therefore, connecting consciously to the body's own rhythmic processes, such as breathing, with the sounds can be used in order to achieve resonance with oneself.

In a recent study carried out at the research section of Applied Consciousness Sciences in Regensburg, we have examined different breathing speeds and measured the effects on subjective mental states as well as on physiological parameters like heart and brain activity. It is well known that heart rate variability increases with slower breathing speeds, indicating parasympathetic activation. This can be interpreted as a sign of a healthy relaxation reaction, which was also confirmed by the subjective perceptions of the participants. In contrast, the slow brain potentials showed a maximum resonance at a breathing duration of 10 seconds per breath cycle, which was much weaker when breathing both faster and slower. The time of exhalation should always be longer than that of inhalation. Since this resonance of 10 seconds per breath also coincides with the rhythm of baroreflex sensitivity, i.e. blood pressure regulation in the body, a slowed 10 second breathing rhythm results in a large resonance of breathing, heart rate variability, blood pressure regulation and above all slow brain activity (Hinterberger et al, 2019; Loew et al., 2017). We therefore recommend trying it out and practicing the special effect of this decelerated breathing for yourself as a method that can be well combined with sound applications.

Process variations and effects

In the following we will try to show different effects which can be achieved by different sound applications. The different forms can merge into each other and are not limited to this categorization.

Gong-paced deep breathing process

A particularly effective form of a sound-supported breathing process uses a gong-paced deep breathing technique. Here, a 10-second breathing rhythm is maintained by gong strikes, with the focus on exhaling while the gong sound fades away. The breathing itself is performed as connected breathing, as it is practiced in the Holotropic Breathwork according to Stanislov Grof. Deep breaths are taken without pausing, which can result in a so-called holotropic state, i.e. an altered state of consciousness with a deep emotional experience.

Relaxation processes

Numerous sound applications such as sound meditations, sound massage as well as quietly played gongs, monochord and other instruments lead to deep relaxation reactions. Since no stimulus-response action is required in the sound experience, they allow muscle relaxation. As stimulus processing and cognitive activity is suspended, the conceptual lack of a sound structure supports a sentient and undirected state of consciousness characterized by open awareness and presence in each moment of listening.

In addition, the calm and gentle stimulation by sounds with limited information content awakens a fundamental faith in hearing, as sounds are not anticipatory. That faithfulness can be a joyful experience, synonymous with an attitude of trusting devotion to life itself. Singing bowls fulfill this requirement excellently. Thus, a nourishing quality for coping with everyday life in times of constant change and great uncertainty can be created.

Sound-supported meditation

Sounds such as those produced by singing bowls with a clear, soft sound characteristic are particularly suitable for accompanying or initiating meditation. The slow decay of the sound guides the meditators on their inner path into silence, in which the meditation is continued. Instead of singing bowls, the sound of a cimbalom is often used at the beginning to initiate the meditation and a single or triple sound is used to call the meditators back into everyday consciousness at the end. Since sounds are free of semantic content, a concept-free state of consciousness is more likely to be maintained.

A sound-based meditation tool has been developed at the research section of Applied Consciousness Sciences, in which a biofeedback system is used to measure the electrical skin conductance during meditation. Skin conductance reactions are correlated with emotional impulses, which often occur in mental aberrations from the mindful, non-judgmental presence at the moment (mind-wandering) and therefore, can serve as an indicator for the meditator, who often notices such mind wandering after some time. The feedback system thereby couples the skin conductance reaction with a pleasant sound signal and thus reminds of the return to mindful presence (see Hinterberger et al., 2018).

Transformative processes

When sounds are presented at higher volume, with a greater variety of tones and possibly are combined with rhythmic and physical activities such as breathing or dancing,

an activation occurs instead of a relaxation reaction. During this activation, altered states of consciousness may occur, such as the holotropic states already mentioned or states of trance and ecstasy. Non-ordinary states of consciousness induced in this way have something challenging about them. Depending on the type of induction and the current state of the person, processes can be triggered that are either dissolving, destabilising or even revealing. This can be used in a positive way, so that in the end a transformation of consciousness can take place, leading to higher clarity, strength and balance. We therefore call these types of intervention transformative processes. However, in order to use such processes in a meaningful and profitable way, it is important to keep a certain process structure and to follow certain rules.

Process properties

The transformative course of the process

We describe the course of such a transformative session in three phases: 1) After an appropriate preparation for the process, the induction phase, which uses sound and/or rhythm to induce a shift in consciousness (compared to the everyday state) is carried out. This is followed by 2) a subsequent post-resting state maintaining silence. In this phase often significant changes of consciousness occur. Finally, 3) an integration phase takes place, in which the resulting state of consciousness and the experiences are integrated in the context of life and everyday consciousness. The duration of each of the three phases should be carefully considered. Especially the post-resting phase should not be too short.

Mode of action

Processes with a revealing character can be initiated by strong sensory stimulation combined with physical activation. As already mentioned, this induces altered state of consciousness with reduced cognitive activity in which general life issues can be triggered, but also possible traumas can be restimulated and worked on in the process (reprocessing). Nevertheless, positive experiences are also possible such as ecstatic summit experiences, states of connectedness or even an oceanic boundlessness, the feeling of being oneness. Here, the spectrum ranges from absolute bliss to a threatening, fearful ego dissolution. Therefore, the integration of the experienced is essential, again, emphasizing an appropriate processing time during a subsequent post-resting state.

During a sound massage with singing bowls, not only the audible and tangible sounds are involved, but also the level of relationship between the person giving the sound and the client.



Photo: Peter Hess® Institut

The role of post-resting

Relaxation processes such as sound massages and sound meditations usually only require a short resting phase of 1 to 3 minutes at the end, as the process itself offers enough space for a meditative experience. On the other hand, in a transformative process a longer period of integration of about 10 to 30 minutes – depending on the intensity of the process – is important and inseparable from the process itself. Often the most important experiences and insights occur during that time. Since transformative processes have an activating effect through their stimulation, but also require active physical involvement (through breathing or movement), certain hormonal processes in the body are set in motion. For example, adrenalin and dopamine are increasingly produced during the activation phase, which results in powerful physical experiences. At the end of the process, however, the released dopamine is converted into endogenous morphine, a process that leads to a euphoric experience, but also to states of happiness and connectedness. If this is embedded in a time of resting afterwards, this

experience can become very conscious and intense leading to insights and states of connectedness. Therefore, it is important not to interrupt this time of rest prematurely. This phase can also bring a transformation or even a solution to any problematic issues that may have arisen.

An additional integration phase can be added to this period of resting. This is especially advisable in cases of revealing, dissolving and destabilizing processes. As already described, the aim here is to integrate the experienced into everyday consciousness. This integration can be achieved either by sharing and exchanging feelings, perceptions and sensations or by artistic and creative expression of the experienced. However, it is advisable to be aware that it is sometimes advantageous to let the experiences have an effect on one's self at first, without verbalizing and communicating them prematurely, because verbalization of a transrational experience may reduce and limit its meaning, which often reveals itself only unconsciously over a longer period of time.

Method	Instruments	Type of process	Modification of consciousness	Duration of application (approx. min.)	Post-resting (approx. min.)
Sound meditation	Singing bowls	Relaxation	Calming, presencing, sensitization	30-60	3-5
Sound pause	Cymbal, Singing bowl	Dissolving	Distancing	1-5	none
Sound massage	Singing bowls	Relaxation, individual setting	Physical contact, calming, presencing, sensitization	30-60	3-5
Gong experience quiet	Gong	Relaxation	Presencing sensitization	15-20	5-10
Gong experience loud	Gong	Destabilising, dissolving, possibly revealing	Chaotisation, presencing, restructuring	15-20	10-30
Gong-paced breathing	Gong	Transformative, revealing	Holotropic states, physical contact	30-60	20-30

Table 1: Sound-supported processes of consciousness and their mode of action, as well as recommendations for application and post-rest periods. These recommendations are merely guidelines that should be individually adjusted.

Initial study results

Finally, we would like to mention some preliminary study results that compare the experience of sound meditation, sound massage, autogenic training (AT) and gong-supported 10-second breathing (GB). Sound meditation and AT showed similar values regarding the significance of the experience, the level of arousal and vitalization. In contrast, the sound massage was rated as a more significant experience by the participants, while GB was perceived as even more significant. The GB also showed a higher level of activation and the highest degree of altered states of consciousness as expected. Compared to all other interventions, the sound massage showed higher values of vitalization, balance and fulfilment in experiencing. These results demonstrate the special effectiveness of the sound massage, whereby it should be noted that sound massage is an individual application, whereas the other interventions were carried out in a group setting. Therefore, the direct relationship between the sound-giver and the client can also be a key factor of effectiveness.

Conclusion

Sounds are an ideal tool for modifying our consciousness. This can take place within a few minutes, as in the sound pause, whereby sessions of about one hour have the potential for radical mental and emotional changes. Just by thoroughly examining the sound characteristics, its possible effect on the state of consciousness could already be well explained. Nonetheless, there are great individual differences and depending on the personality structure, the personal treasure trove of experience and the current condition, the effects can be very different. Generally, mellow sounds tend to have a relaxing effect and can lead the listener into a mindful and meditative state, whereby attention is directed from cognitive thought



processes to non-conceptual sound and body perception. Stronger sounds involving the body, on the other hand, lead to activation and can induce deeper processes with altered states of consciousness, which can also have a revealing character and thus, illuminate a client's personal life issues. Such transformative processes need the above-mentioned post-resting phase, a subsequent phase of silence, which however is an indispensable part of the process and can comprise further essential experiences. The spectrum of possibilities presented in this article shows the great and tremendous potential of sounds in consciousness work. We would therefore like to invite everyone to open up to this potential, but also to always maintain the necessary respect for the impact of the powerful tool of sound.

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