University of Paderborn Faculty

of Cultural Studies

He who has ears, let him hear!

Hypnosystemic pastoral care and tinnitus

Doctoral thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy (Dr. phil.) in Protestant Theology (Practical Theology) at the University of Paderborn

by

Stefan Hammel

Supervisor:

Prof. Dr. Harald Schroeter-Wittke

Contents

Foreword 5

PART 1: FOUNDATIONS

1 **Introduction** 6

2 **Hypnosystemic body-mind counselling – Five examples from practice** 8

2.1 Orthopaedic treatment exhausted – working with a member of the congregation 9
2.2 The trembling arm – working with a member of the congregation 9
2.3 Come to stay – working with a patient 10
2.4 Lumbago – Working with a clinic employee 12
2.5 He who has ears, let him hear – working with a colleague in pastoral care 12

3 **It would take a miracle – Chronic tinnitus: The medical prognosis** 14

4 **The Heidelberg pilot study – Background to our study** 15
4.1 Trial procedure 16
4.2 Therapeutic interventions 17
4.3 Overview of results 17
4.4 Conclusion 18

5 **Design of the current measurement experiment** 19

6 **Sample** 19

7 **Exchange of information with the test subjects prior to the experiment** 19

PART 2: TREATMENT

8 **Models for the development and treatment of tinnitus** 23
8.1 Development in the brain and nervous system 23
8.2 Development in the area of bodily functions 25
8.3 Origin in the area of biographical experience 26

9 **Treatment goals** 28
9.1 Various possible goals 28
9.2 Reduction of noise perception, raising or lowering of the hearing threshold 28
9.3 Suppression of noise by "forgetting" it 30
9.4 Reduction of emotional stress 31

10 **Treatment methods** 31
10.1 Suggestion for involuntary noise suppression 32
10.2 Reversing the focus of attention from noise to silence 33
10.3 Metaphors for regulating tinnitus characteristics and hearing threshold 34
10.4 Psychoeducation for regulating tinnitus characteristics and hearing threshold 35
10.5 Exercises for regulating tinnitus characteristics and hearing threshold 36
10.6 Therapeutic greetings 37
10.7 Let the symptomatic side learn from the symptom-free side 37
10.8 Transformation from acoustic to visual experience 38
10.9 Transformation from acoustic to physical experience 39

10.10 Transformation from acoustic to emotional experience 40
10.11 Metaphors for muscle relaxation and the functionality of the auditory organs 40
10.12 Therapeutic modelling 41
10.13 Trauma therapy-oriented metaphors 42
10.14 Treating accompanying sleep disorders and depressive tendencies 43
10.15 Changing the meaning 43
10.16 Deconstruct scepticism, reinforce plausibility for therapeutic efficacy 45
10.17 Paradoxical intervention 45
10.18 Post-hypnotic suggestion 45

11 **Three treatments** 46
11.1 Mrs W. 47
11.1.1 Course of treatment 47
11.1.2 Feedback from the test subject on her listening experience (summary) 56
11.1.3 Comments on the procedure 56
11.2 Mr E. 62
11.2.1 Course of treatment 62
11.2.2 Feedback from the test subject on the listening experience (summary) 77
11.2.3 Comments on the procedure 78
11.3 Mr K. 84
11.3.1 Course of treatment 84
11.3.2 Feedback from the test subject on the listening experience (summary) 94
11.3.3 Comments on the procedure 95

PART 3: MEASUREMENT

12 **Scientific methods for data collection** 100
12.1 Magnetoencephalography (MEG) 101
12.2 Heart rate variability (HRV) 103
12.3 Vocal spectrum analysis 105
12.4 Auditory discrimination tests – Individual sound perception and hearing ability 106
12.5 Objective loudness and frequency of tinnitus 108
12.6 Subjective scaling of noise intensity 108
12.7 Tinnitus questionnaire (TF) 108

13 **Test results** 109
13.1 Magnetoencephalography (MEG) 109
13.2 Heart rate variability (HRV) 111
13.3 Vocal spectrum analysis 111
13.4 Individual sound perception and auditory discrimination tests 112
13.4.1 Volume 113
13.4.2 Frequency 113
13.4.3 Hearing thresholds for air and bone conduction 113
13.5 Objective loudness, relative loudness and frequency of tinnitus 114
13.6 Subjective scaling of noise intensity 114
13.7 Tinnitus questionnaire 115

14 **Discussion** 115
14.1 Overview of the most important test results 115
14.2 Possible correlations 116
14.2.1 Relationships between different measurement results 116

14.2.1.1 Subjectively scaled vs. psychoacoustically measured tinnitus loudness 119
14.2.1.2 P1 synchronisation vs. scaled or relative tinnitus loudness 120
14.2.1.3 Right-left difference in P1 amplitude vs. hearing thresholds 121
14.2.1.4 P1 amplitude vs. change in hearing thresholds 122
14.2.1.5 Voice vs. change in hearing thresholds 123
14.2.1.6 Voice vs. stress (TF) 123
14.2.1.7 Voice vs. parasympathetic activity 124
14.2.1.8 Sympathetic and parasympathetic activity vs. heart rate 124
14.2.1.9 Sympathetic vs. parasympathetic activity 125
14.2.2 Relationships between subject characteristics and measurement results 126
14.2.2.1 Gender vs. therapeutic effect with regard to tinnitus volume 126
14.2.2.2 Age vs. therapeutic effect with regard to tinnitus volume 126
14.2.2.3 Musicality and heart rate variability 126
14.2.2.4 Musicality and stress (TF) vs. voice volume 127
14.2.2.5 Hearing profile and hearing threshold lowering 128
14.2.3 Relationships between exemplary treatments and measurement results 128
14.2.3.1 Measurement results for Ms W. 129
14.2.3.2 Measurement results for Mr K. 131
14.2.3.3 Measurement results for Mr E. 133
14.2.3.4 Apparent stagnation at the beginning – or initial treatment successes 134
14.2.3.5 A change in the location of the tinnitus noises 135
14.2.3.6 The shift in the hearing threshold 136
14.2.3.7 Disappearance of the sounds 136
14.2.3.8 Muscle tension, voice tone, heart activity and TF values 139
14.2.3.9 Biographical and symptom-oriented work 140
14.3 Summary of neurological, hearing and stress-related findings 140
14.3.1 Neurological findings 140
14.3.2 Hearing-related results 142
14.3.3 Stress-related findings 143

PART 4: FURTHER INFORMATION

15 **Possible consequences for perception disorders in a broader sense** 145
15.1 Sudden hearing loss 145
15.2 Polyneuropathy 146
15.3 Hyperosmia, hyposmia and anosmia 146
15.4 Allergy 147

16 **Conclusions and outlook** **148**
16.1 Physiological 148
16.2 Psychotherapeutic 149
16.3 Poimenic 151

APPENDIX

17 **Literature** **153**

Acknowledgements **161**

Explanation **162**

Foreword

Are miracles possible? That depends on what you mean by 'miracle' and what you mean by 'possible': in other words, which concept of 'possible' applies to which concept of 'miracle'.

"A stone can also fall upwards if, by chance, all the molecules move in the same direction; this happens very, very rarely," they say in my family. This way of thinking was probably influenced by my father, who taught control engineering, statistics and mechanics at a technical college. In his mind, everything was based on probabilities.

"With men it is impossible, but with God all things are possible" and "All things are possible to him who believes"[1] – these phrases belonged to the world of my grandfather, who taught me about the healing stories of Jesus. If miracles happened in Jesus' time, I always thought, then they can happen today too. And for some reason – or perhaps because of my upbringing – it seemed beyond doubt to me that the healings described in the Gospels actually happened. It is quite possible that this confidence helped me in my work as a hypnotherapist. Where autosuggestion and suggestion are important, those who expect much can achieve much.

In scientific thinking, whether something is possible is a question of statistical probability. Miracles, as recounted in the stories of Jesus' healings, do not tend to belong to the canon of what is scientifically investigated. This is not because they have been proven impossible, but because, when they do occur, they do not do so with a regularity that would allow them to be investigated.

Conversely, this means that if miraculous events (such as healing through the influence of words) occur regularly, then the observed changes can be described scientifically. This does not explain why the changes occur, but it does document that they do occur. It is a little like Jesus sending a healed leper to the priest to have his healing certified: the priest's examination cannot explain why the man is healed, it only confirms that he is healed[2].

Thus, the present study does not focus on clarifying how hypnosystemic treatment of people with tinnitus works, but rather on documenting in figures the effects that can be proven to lead to a cure.

Healing through words – something is shown that is "possible" even though it is considered "impossible". Chronic tinnitus is not "actually" considered curable. Achieving significant changes or experiencing silence in a short 90-minute treatment seems impossible.

Can one speak of a "miracle" when it actually happens? It depends on what you mean by that. I suggest that anyone who speaks of a "miracle" is expressing that they perceive something externally as factually true that they consider impossible internally. The term "miracle" then refers to the discrepancy between a felt, indisputable internal concept of possibility and a factually indisputable external reality. As soon as consciousness changes the internal labelling of external events from "impossible" to "possible" because the factuality of what has happened is recognised, what was initially considered a "miracle" becomes a promising discovery of new possibilities.

---

[1] Mt 19:26 and Mk 9:23, quoted here and below from the Luther Bible, Bible Society, 2017.
[2] Matthew 8:4, Luke 17:12-14. cf. John 9.
[3] See chapter 3.

PART 1: FOUNDATION

1. Introduction

"He who has ears, let him hear!"[4] – What did Jesus mean by this statement, if he did indeed say it? We will never know for certain. In the Bible, Jesus' exclamation is found in this or a similar form in the testimony about John the Baptist in Matthew 11:15, in the parable of the sower in Matthew 13:9, Luke 8:8 and Mark 4:9.23, in Matthew 13:43 in the interpretation of the parable of the weeds in the field, and in Luke 14:35 in the saying about salt that has lost its saltiness. Luke and Mark each quote Jesus in the form: "He who has ears to hear, let him hear!" In addition, the saying is repeated in the Apocalypse of John in the variant: "He who has ears, let him hear what the Spirit says to the churches!" and once in the form:
"If anyone has ears, let him hear!"[5] . It is found apocryphally in the Gospel of Thomas[6] .

Undoubtedly, many connections can be made from here: one thinks of "Hear, O Israel"[7] and the prophetic formula "Hear the word of the Lord"[8] , as well as countless Torah and prophetic texts on the theme that Israel does not listen to God's word[9] .

God, who cannot be captured in images, seems to manifest himself in acoustic space, in the spoken and heard word. However, the fact that God encounters humans through hearing is also expressed beyond the word and words. Elijah encounters him as a "still, gentle whisper" that the prophet hears. And Samuel announces God's punishment as a sound so shrill "that everyone who hears it will have both ears ringing"[10].

"He who has ears, let him hear!" Readers familiar with Scripture may have heard in this exclamation Jesus' claim to be one of the prophets who sought to make the word of God heard, often in vain.

Matthew emphasises this aspect: his call to listen is preceded by Jesus' testimony about John the Baptist: "All the prophets and the Law prophesied until John; and if you are willing to accept it, he is Elijah who is to come." And the lament that God's word falls on deaf ears because people prefer to talk rather than listen follows immediately after the call: "But to whom shall I compare this generation? It is like children sitting in the marketplace and calling out to others: We played the flute for you, and you did not dance; we sang a dirge, and you did not weep. For John came neither eating nor drinking, and they say, 'He has a demon.' The Son of Man came eating and drinking, and they say, 'Behold, this man is a glutton and a drunkard, a friend of tax collectors and sinners!'" [11]

In Mark, the parable of the sower is framed by: "Listen! Behold..." and "He who has ears, let him hear!", and in verse 23, the wake-up call is immediately followed by the exhortation: "Take heed what ye hear!"[12] .
Obviously, the point is to sharpen perception[13] or improve the processing of what is perceived – the only question is how. The exclamation "He who has ears,

---

[4] He who has ears to hear, let him hear. Mt 11:15.
[5] Rev 2:7, 11, 17, 29; 3:6, 9, 13, 2 and 13:9. For an interpretation of the word in the Apocalypse of John, see Maier, 2018, p. 146.
[6] EvThom 8:21, 24, 63, 65, 96.
[7] Deut 6:4-9.
[8] Jos. 3:9, 1 Kings 22:19, Isa. 39:5, Jer. 22:2, 29, Ezek. 16:35, Amos 7:16 et par.
[9] For example, in Deut 11:13-17, 26-28, Isa 1:2-3, Jer 7:26; 17:23.
[10] 1 Kings 19:12; 1 Samuel 3:11, cf. 2 Kings 21:12ff. Steiner (2012, p. 30f.) sees a connection between both, the rushing sound and the ringing in the ears, and tinnitus.
[11] Matthew 11:13-19. "The story in Matthew will show that [Israel] will reject John, its Elijah, and Jesus, the Son of Man, its Messiah. The warning call in verse 15 is intended to make the people aware of this fundamental decision. From the end of Matthew's story, it sounds like a warning signal before Israel's missed decision." Luz, 2016, p. 180.
[12] Cf. Söding, 2022, p. 120.
[13] In addition to hearing, also seeing, cf. Matthew 11:4-6.

"Let him who has ears hear!" implies that not everyone necessarily hears just because they have ears. This is true from a biological point of view, and those who hear do not hear the same thing as others who hear the same thing...[14]

Certainly, Jesus was not concerned here with the hearing of his listeners. Rather than acoustic hearing, it is more about understanding – this is what the synoptic gospels imply immediately after the wake-up call, where it says that the disciples are "given to understand the mysteries of the kingdom of God", but the others "will not understand, even if they hear it."[15] Perhaps Jesus was moved by what would become of the word he proclaimed among his listeners [16]– as someone in more recent times has put it:

"What is said is not yet heard, what is
heard is not yet understood,
understood is not yet agreed to, agreed to is not yet
done, done is not yet done right."

But for some, the word of God strikes and transforms them, sometimes very vividly:

“The blind see and the lame walk, lepers are cleansed and the deaf hear, the dead are raised and the poor have the gospel preached to them; and blessed is he who takes no offence at me.”[18]

According to Matthew, this is Jesus' answer to John, who sends his disciples to him with the question: "Are you the one who is to come, or should we wait for another?" Preceded by the words: "Go and tell John what you hear and see..." the reply contains a summary of Jesus' deeds as well as numerous allusions to prophetic announcements of God's eschatological act of salvation, in the context of which it is to be understood as a reference to Jesus' messianic mission[19].

It seems that Jesus – unlike we often do today – regarded physical, mental, social and spiritual healing as directly related. The accounts of his ministry give the impression that *one* form of healing often went hand in hand with another and that physical healing could be an expression of a deeper, more comprehensive healing.

With the immersion of the Christian message in Hellenistic culture, the dichotomy of "body" and "soul" (or, as in Paul, "flesh" and "spirit") became significant for the understanding of humanity, "healing" and "salvation". For many centuries, the Platonic distinction between body and soul (or the Aristotelian division into body, soul and spirit) dominated European thinking about human beings – not only in theology and philosophy, but also in medicine and ultimately in psychotherapy.

Discoveries in psychosomatic medicine, psychoneuroimmunology, neuroscience, genetics and epigenetics have called this classification into question, if not

---

[14] On the different ways in which different people hear the same acoustic content, see Schneider, 2005.

[15] Luke 8:30, similar to Matthew 13:11-17; Mark 4:11-12.

[16] "This cannot refer to the physical ear – everyone has that – but rather to the inner willingness and ability to accept Jesus' *teaching*." Schenke, 2005, p. 127. Similarly, Schmitz, 2022, p. 108, on Mk 4:9, 23: "This cannot refer to acoustic perception, which is given to all those present... It is about a deeper understanding of the parable, in which the listeners can find themselves and recognise themselves as the persons addressed in the depth of the narrative." Since this work is not exegetical in nature, I will refrain from an in-depth examination of the history of tradition here.

[17] Education and Teaching, 1991, p. 129. The quote may have been made by the Viennese physicist Herbert Pietschmann, cf. Krieghofer, 2020. A variation reads: "Thought is not said, said is not heard, heard is not understood, understood is not wanted, wanted is not done, done is not maintained." –
"Nothing is more necessary than understanding listening," says Grundmann (1989, p. 128), referring to Mark 4:23-24. This can be supplemented in the spirit of Jesus' traditional teaching: Understanding listening is necessary, leading to right and consistent action.(18) Matthew 11:5-6. This is certainly a Matthew formulation that refers to the fact that what was announced in the Torah and by the prophets is fulfilled in Jesus. At the same time, it seems to me that the word sums up Jesus' attitude of treating all dimensions of salvation and healing as a unity. Cf. the introductory and concluding words of Jesus in various healing stories, such as Matthew 9:6, Luke 5:34, John 9:2-3.

[19] Cf. Klaiber, 2015, p. 222f.

It has even been rendered obsolete: it can hardly be considered the basis of a modern view of humanity. What people today refer to with terms such as body, psyche or consciousness are not two or three systems, but *one* system described from different perspectives.

For theology, the reintegration of the concepts of body and soul raises many questions, including the very practical one of what pastoral care that is also care for the body might look like, i.e. care that, far removed from the Platonic separation, looks simultaneously at the body, soul, social and spiritual existence of human beings and regards them as whole and undivided, in need of salvation and healing.

One area of modern thinking in which the same view and approach is applied in principle to challenges described in physical, mental and social terms is hypnosystemic therapy, which was first developed by Gunther Schmidt on the basis of Milton Erickson's hypnotherapy, systemic therapy and therapeutic parts models[20].

In my experience, the approaches used in this form of therapy can be integrated extremely effectively into pastoral counselling sessions, whereby physical, psychological and interpersonal stresses are addressed equally and often simultaneously. Approaches to hypnosystemic pastoral care have now been developed[21]. The same conversation techniques used here are also used in hypnosystemic therapy to reduce and resolve physical symptoms and illnesses. This brings hypnosystemic pastoral care, which is also physical care, within reach.

Since our approach comes from therapeutic work, I often refer to it as "therapeutic" or "therapy". In some of the treatments described later, I repeatedly refer to
"pastoral caregiver/therapist" to express that the companion or practitioner can be both in one person (and in this case is). Of course, "therapy" and "pastoral care" are not the same thing, and I do not wish to refer to Stollberg's much-quoted definition of pastoral care as
"Psychotherapy in a church context"[22]. However, I believe that therapeutic action can be one aspect of pastoral care and that pastoral care can then also have a therapeutic effect. In general, I see pastoral care as a communicative activity of Christians[23] that aims to open up and deepen an experience of "being whole" in encounters with others. Physically, mentally and socially, this can be described as an experience of liberation, as relief from suffering and also as
"healing", or in spiritually oriented language as "salvation".

2 Hypnosystemic body-soul care – five examples from practice

Concepts that integrate physical healing into pastoral care have found their way into church practice here and there in recent decades in the form of laying on of hands, praying for healing and healing services, in state church and free church contexts within the framework of charismatic communities. However, a physical pastoral care practice that integrates psychotherapeutic or complementary medical concepts has not become established. Experiences of healing through hypnosystemic pastoral care occasionally occur in individual encounters. I would like to cite five examples from practice. The first two are from community work, the last three from hospital pastoral care.

---

[20] Schmidt, 2004, 2005, 2025.
[21] Cibulka, 1992, n.d.; Hammel, 2006; Kachler, 2010, 2018, 2021, Domanski, 2022, 2024, 2025.
[22] Stollberg, 1969, 1972.
[23] Gender note: In this paper, I sometimes switch between the use of masculine and feminine forms. In more technical sections, I predominantly use the masculine form in order to promote clarity of the text through concise, consistent language. In sections of text with a therapeutic focus, I often follow the fiction that a therapist is dealing with a female patient. This assumes that the encounter can also take place in reverse, same-sex or diverse roles. Where it does not impair comprehensibility, I often use the masculine *and* feminine forms together.

2.1 Orthopaedic treatment completed – working with a member of the congregation

Jean-Otto Domanski, a hypnosystemic counsellor in Berlin, reports the following:

> At the beginning of my hypnosystemic training, I asked an elderly lady from my congregation if I could work with her. Due to her chronic pain, she rarely attended church during this time. She told me that she had to have surgery on her knee at the age of 12. The knee healed incorrectly and had to be broken again. She spent several months in hospital and her knee never fully recovered. When she was younger, her body was able to compensate, but as she got older, the pain became increasingly severe. From an orthopaedic point of view, she was considered to have exhausted all treatment options. I offered her various techniques... Each brought slight relief. In the third session, I used the "basket that travels through time"[24] , a method developed by Stefan Hammel. I invited her to mentally take her complaints and pain into the past. In a relaxed state, under my guidance, she imagined a basket in which she placed all her pain and symptoms, as if on a dream journey, and then had a copy of herself take it into the past in her mind. Little by little, we went back through her life as if on a timeline and deposited all the symptoms and pain where they had originated and belonged. On the way back, we gathered all the resources, everything that strengthened her and all the love from her past and brought it back to the present. This mental journey was very moving for her and resulted in her no longer having any pain in her knee for many years – even though the condition of her knee had not changed."[25]

"No work without a mandate" is a rule from systemic counselling. This is especially true when therapeutic methods are offered in a non-therapeutic context.
Consequently, Domanski asks the lady from his congregation if he may work with her. The term "may" can be understood in the sense that it would be a pleasure or an honour for him if she allowed him to do something for her, much like when a hotel employee asks, "May I carry your suitcase for you?" Nowadays, people do not usually approach a pastor with a request for pain relief or physical healing. If we want to contribute to the well-being of our conversation partners in this way, we can ask whether this is desired and thus "fish" for a commission.

In one of the healing stories recorded in the Bible, it is also noted that Jesus clarified the request (i.e. the task, so to speak) of his counterpart before performing a healing: "What do you want me to do for you?"[26]In another case, it is said that he followed up with: "You say, 'If you can' – all things are possible to him who believes."[27]

2.2 The trembling arm – working with a member of the congregation

Domanski reports on another pastoral encounter as follows:

> "A woman from the congregation had a pacemaker fitted. During the operation, a nerve was damaged. Since then, her right arm had been trembling as if she had Parkinson's disease, and she had to hold it with her left hand to keep it still. The operation had been three weeks ago. She reported that, according to the doctors

---

[24] Cf. Hammel, 2014, p. 124ff.
[25] Domanski, 2022, p. 8f.
[26] Mk 10:51. Of course, this is not a clarification of mission in the modern sense, and we can only speculate about Jesus' motives in asking this question. What is striking, however, is that Jesus is not satisfied with the request "Have mercy on me!", but wants to know more before he acts.
[27] Mk 9:23.

the tremors might disappear in six months with a bit of luck. I asked her if it would be okay if I talked to her arm a little. With her permission, I put her into a trance and began to tell her about a beautiful old house that had been damaged but was now being restored. The craftsmen begin to carefully open the walls to replace the damaged pipes and beams. They renew the defective water, electricity and telephone lines. They systematically go from room to room, plastering the cracks in the masonry and checking whether the roof is watertight. They also go into the basement. They cover some particularly stressed pipes with a golden protective layer. Then they seal all the holes again, wallpaper and repaint the house inside and out, until finally the sun shines through the freshly cleaned windows and it is a joy to live in this house. In between, I spoke directly to her arm and told it that it had every right to be so upset. This should not have happened, but the danger was now over and it could calm down. As I talked to her for about 20 minutes, I could see the trembling subside and her arm finally lie completely still in her lap. She later told me that she hadn't understood everything I said. However, she felt her arm getting warmer and warmer and, for the first time since the operation, she felt that her arm belonged to her again. When we said goodbye, she gave me her right hand. A few days later, she told me that the effect had lasted until the next morning, when her arm had started to tremble again. However, she was confident that this would soon disappear because it was now her arm again. When I visited her the next time, she was able to use her arm and hand normally."[28]

Enabling physical healing is not part of the current range of services offered by pastoral care. Here, too, it is logical for Domanski to ask whether he may take action in a way that probably does not meet the woman's expectations of a pastoral care conversation. He does so in a slightly humorous but benevolent manner, and the woman accepts his offer. The announcement that he will speak to her arm already causes the woman to dissociate from her usual thinking and from her experience of her arm as part of her range of possibilities. Thus, an event is initiated that does not follow the rules of her mind, but rather the different rules of her arm.

2.3 Here to stay – working with a patient

I met an elderly gentleman in a hospital room. I introduced myself:

"Good afternoon. I am the hospital chaplain and would like to ask how you are doing." "I arrived here early this morning. I had a severe rheumatic flare-up. I am in a lot of pain," said the man.

He sat tensely on the edge of the bed and looked at me. "And you're probably here so that the doctors can make the pain go away a little...?" I asked him.

"Can you do that? Can you make my pain go away?" Was the man hard of

hearing? I hadn't said that at all!

I could have said "no," but that felt like a lie. "Yes" didn't seem quite right either. What should I say? I remembered that Jesus did not turn away those who asked for a miracle. "No work without a request" is what they say in systemic therapy, but this was a request, and more like a pleading appeal.

---

[28]Domanski, 2022, p. 110f. Further case studies of hypnosystemic pastoral care for the alleviation of physical complaints ibid. p. 46f., 88.

"Let's see what your body can do for you. May I borrow your arm? Thank you very much... Imagine you are a tree and this arm is a branch... What kind of tree are you?" "An elm tree." "Very nice! A wonderful, rare tree! An elm tree doesn't feel anything, can you imagine that?" "Yes, yes..." "There's been a lot of snow on the branch for many hours now. If there had been snow on your arm for hours, you wouldn't feel anything either, would you?" "That's right..." "So the arm has been covered in snow for hours, or the branch, if you look at it that way. What is actually the most insensitive area of your arm right now?" "There, at the wrist." "And if the numb feeling on your wrist were a light, what colour would it be?" "Yellow." "Let this beautiful yellow light shine brighter and brighter, then spread it throughout your arm, and then let it travel through your chest and back to the other side. You can also touch the less bright hand with your bright hand, then it will go even faster... you're doing very well. Let the light travel up to the top of your head and down your back. You can also imagine melting snow running down your back, especially to the places that need it most. Where would that be?" "My knees." "Let the light and the snow go there especially, and when it's good there, what comes next?" "The neck." "There too now!" We continued talking like this for a while. "I see you dangling your legs like a little boy on a swing. You look very lively! How are you feeling? "That can't be! How is that possible? I'm not in any pain anymore..."

"You can tell that it's possible because it's happening. Give your body a warm welcome, this has come to stay, and if any remnants of your previous condition come back to see if you need what you had before, then I would ask you to sit down, dangle your legs and do the things with your body that we did today..."[29]

In this encounter, it is not the chaplain's offer that contrasts with the patient's expectations, but the other way around: the patient surprises the chaplain with an unusual expectation – or at least with a request that sounds as if he is asking for a miracle. Jesus probably received such requests more often, but we today do not normally do so. In the situation described, I noticed that, on the one hand, I assumed that I could help alleviate the man's pain, but that I did not want to present this as something I "do".
"Let's see what your body can do for you..." seemed to me to be an appropriate way to respond to the man's request for help. I could also have said, "...what God can do for you...", but I feel reluctant to present healing as a kind of miracle that comes to people from outside. This may have to do with the fact that I don't want to offend the man, whose beliefs I don't know, but also with the fact that I see "God" less as a counterpart to creation (including human beings) and more as something inherent in everything.

In retrospect, I see a parallel to what Jesus often said to people he healed, according to biblical tradition: "Your faith has helped you."[30] Jesus attests to people's ability to trust in... whom or what, actually? God, Jesus, the possibility of becoming healthy? The authors of the biblical texts do not say. Perhaps it is obvious to them what the healed believed in, or perhaps they deliberately refrain from specifying.

[29] Hammel, 2023, p. 126ff.
[30] Luke 8:48; 17:19; 18:42 et al.

2.4 Lumbago – working with a clinic employee

A clinic employee told me about a lumbago that had been bothering her since the previous day. She was considering whether to have an injection for the pain or to wait and see if the tension would resolve itself. I asked her if I could show her some techniques from "my other world" that might help relieve her lumbago. She agreed.

I asked her if I could borrow her left arm – which she allowed – and asked her to stretch it out and clench her fist as tightly as she could. I told her to imagine that her arm was a metal beam in a building, rigidly and immovably fixed between two walls, so firmly that it was completely immovable, and "while you imagine this, try to move your arm, only to realise that you cannot."

She tried it and was astonished to find that she really couldn't move her arm[31]. I told her that the rigidity of her left arm would be transferred to her right arm at my signal, so that it too would become immovable. She should now close her eyes, and they too would be unable to open for a short while. Next, her entire body would fall into this rigidity, but she would be able to stand firmly and securely. Now her head and speech organs would become flexible again, so that she could speak normally. Everything happened as announced.

I explained that this condition was accompanied by a tendency towards numbness and asked her where in her left arm she felt a particularly pronounced sensation of numbness and insensitivity. I asked her to intensify this experience imaginatively and then let it travel through her body to her back and everywhere else where it was particularly needed. The numbness could move like a cool vapour or a liquid, especially to those parts of her body that had previously been uncomfortable. After a while, I told her she could now shake herself out.
This would completely relax her muscles and she would experience a pleasant flexibility and a wonderful feeling in her body. The employee shook out her body, was extremely flexible and completely pain-free. The lumbago had completely disappeared. The effect lasted, as she told me several times the next day and in the following weeks.

During this encounter, I used techniques that are otherwise known from the field of stage hypnosis – although in this case it was not about "show" but about therapy. Arm catalepsy was induced, which was gradually extended to the whole body, then hypnotic anaesthesia and finally a resolution of the catalepsy while maintaining the analgesia as part of the previously induced anaesthesia. The process serves to circulate:
"Pain causes tension and tension causes pain" can be resolved, similar to the administration of painkillers in medicine. The effects used are based on suggestive arrangements. They require linguistic implications that are not consciously processed and are therefore implemented unconsciously. For example, the permission to "lend" the arm
"borrow" one's arm implies that the woman accepts losing control of her arm, the term
"try" implies an expected failure, and the expression "only to notice" categorically excludes any other observation. A certain type or depth of trance is not required for the procedure.

2.5 He who has ears, let him hear – working with a colleague in pastoral care

A pastoral caregiver at Kaiserslautern Hospital reported that she was no longer able to sing in the choir as she had done in the past due to voice problems. The loss of various frequencies in her vocal range was clearly audible. The situation had worsened significantly after a viral infection. Although

---

[31] The effect described is presented in Hartmann, 2020, 17:30-18:30.

her voice had recovered somewhat, but she was still far from a full recovery. She also experienced tinnitus, which had been present on the left side for a long time and had recently started on the right side as well. This did not interfere too much with her everyday life, but it was particularly annoying in situations of external silence. I asked her if I could demonstrate some hypnosystemic techniques based on these symptoms. She agreed, and I asked her:

"If you imagine that you could split yourself into several people and the one with the rough, somewhat cracking voice could step out of you, where would she stand? ... Can you describe to me how she stands? What is her posture like, how does she look? ... I notice that your voice sounds clearer, stronger, more resonant. Do you notice that too?" My colleague noticed it too and was impressed by the change. "But there were still some frequencies missing in your voice. How many people who are missing a frequency in their voice could we bring out of you – perhaps there too? ... Do these people look like you or like someone else? Look at them in your mind's eye – how old are they? Do you have any idea what stresses there might have been at that age that could have contributed to the loss of these frequencies?" Using these and similar techniques, my colleague's voice was largely restored within twenty minutes. "Now let's take a look at the tinnitus. Let's start with the younger sound on the right side. If there is a person inside you who hears this sound, where would they stand?
... And if there are several, how many do we put there? ... Is it okay with you if we put as many people inside you who produce the sound as there are people who hear it? Look at them; how are they standing? What is their posture, their facial expression ... How old are they?
Do you have any idea what you might have experienced back then...?" My colleague said that the tinnitus in her right ear had already reduced significantly. "I know that these methods might seem a little strange, but perhaps you could say that the important thing is that they work. Would you allow me to try something even stranger? May I pull the tinnitus out of your ear?" My colleague agreed. I mimed pulling the sound out of her ear as if it were a string-like object. "What colour is the sound I'm pulling out? And as I pull further, how does it change? Does the colour or thickness or structure of the material change?" My colleague explained that the sound was blue, becoming paler and more transparent, like a string that was becoming thinner and smoother and finally disappeared completely. With the string, the sound had also disappeared. "Then let's turn to the left ear..." In the left ear, there were many more protagonists representing the sound or partial sounds. Some were my colleague herself at different stages of her life when she had experienced crises, others were relatives or unknown people. When pulling out the sound as a kind of coloured rope, the colours and thickness of the material changed much more slowly than with the right ear. At some point, the rope frayed and only part of the original strands continued. Progress was now slower than at the beginning. After about an hour and a half, I finished the work. The tinnitus on the right had disappeared, and the tinnitus on the left had reduced in its sound spectrum and was somewhat quieter, but still clearly present. Over the next few weeks, part of the tinnitus on the left side returned. The improvements experienced in the area of the voice and the tinnitus on the right side remained stable.

Here, too, I first asked for my colleague's consent before showing her methods that do not necessarily fit into the spectrum of traditional pastoral care. Interestingly, my colleague was more impressed by the restoration of her voice than by the partial disappearance of her ear noises. This can perhaps be explained by the fact that the ear noises had never particularly bothered her, but the loss of her singing voice had. On the other hand, it may be related to the fact that the improvement in her vocal expression was also noticed by her husband and colleagues, while the partial disappearance of the phantom noises naturally escapes public perception. Thirdly, the fact that she needs her voice to practise her profession probably plays a role, so that the partial loss of her voice can also be disturbing in this respect.

3 It would take a miracle – Chronic tinnitus: The medical prognosis

The prognosis for chronic tinnitus sufferers losing their symptoms is comparatively poor. A British long-term study involving over 4,700 people affected by chronic tinnitus (lasting 3 months or longer) yielded the following result[32]:

Spontaneous remission of the noises within 4 years:	18.2%
Persistence of the noise beyond 4 years:	81.8%
with subjective improvement of symptoms	9.0
with subjective worsening of symptoms	9.0

Another study specifically sought out patients who had suffered from chronic tinnitus for more than three months and had then been symptom-free for six months. Eighty patients in complete remission were included, i.e. individuals who no longer perceived tinnitus even in complete silence and when consciously listening for any noises. 78% of respondents reported a gradual disappearance of symptoms and 22% reported a sudden disappearance. In the following year and a half, 8% experienced tinnitus again, while 92% remained symptom-free[33].

The situation is no better for patients undergoing medical treatment. A study from Zurich and Regensburg concludes: "There is no treatment that can reliably eliminate tinnitus or reduce its volume, which would be the main wish of most patients."[34] The authors of a Turkish study on hypnotherapy for tinnitus summarise the situation as follows: "Although there are many alternative treatment options, it must be emphasised that there is currently no cure for tinnitus. However, small changes in symptoms can improve patients' quality of life."[35]

Some German-speaking ENT doctors express themselves even more clearly: "The chances of directly eliminating tinnitus in the chronic phase are slim.... In the case of tinnitus... this [‘switching off’] does not work. Experience shows that tinnitus is very individual and complex, so there will be no such... procedure in the foreseeable future..."[(36)] Attempts to eliminate tinnitus, "even with hypnosis (!), have proven unsuccessful, as what we want to eliminate or combat becomes even more conscious"[37] . "In cases of prolonged tinnitus perception (chronic stage), it has been shown that any further efforts to 'eliminate' the tinnitus tend to increase rather than alleviate the suffering caused by tinnitus"[38] , and:
"Do not expect that long-standing chronic tinnitus can be objectively improved"[39]. A psychologist specialising in tinnitus therapy explains that "the unrealistic expectation that the tinnitus will disappear completely" is a contraindication for treatment[40].

From this perspective, the improvement in symptoms experienced by the colleague in section 2.5 must be considered an exception, a mistake or a miracle.

---

[32]Dawes et al., 2020. 18.2% spontaneous remissions over a period of 4 years correspond to a rate of 0.012% of patients whose tinnitus resolves on a given average day, or a probability of 1:8300 for this case.
[33]Sanchez et al., 2021. If tinnitus *can* disappear spontaneously, then the question is no longer *whether* a cure for the symptoms is possible, but *how* it can be optimally promoted therapeutically. The authors also note this:
"Unlike the knowledge obtained from clinical trials, this study showed that long-lasting total remission of tinnitus may occur. This status was reached by individuals of any gender and age range, with any location and duration of tinnitus, mostly as a gradual process. Future studies should better clarify how each treatment modality may achieve the best results."
[34] "There is no treatment that can reliably eliminate tinnitus or reduce its loudness, which would be the main wish of most patients." Kleinjung et al., 2024.
[35] "Although many alternative treatment options are available, it should be emphasised that there is currently no cure for tinnitus, but minimal changes in symptoms may improve the patient's quality of life." Yazici et al. 2012, p. 10.
[36] Ross, 2024, p. 77.
[37]Ross, 2024, p. 142.
[38]Schaaf, 2017, p. 37.
[39] Steinriede, 2002, p. 154f.
[40] Kranz, 2017, p. 46.

With this current study, I would like to scientifically and differentiatedly determine what effects can actually be expected from a hypnosystemic approach in terms of alleviating or curing tinnitus.

Milton Erickson has an interesting perspective on this, by the way. During therapy, he tells a tinnitus patient "that it is possible to learn to hear only certain sounds if you adjust your ears accordingly. You hear a ringing in your ears, but you haven't thought of adjusting them so that you don't hear the ringing... As for adjusting your hearing... you can get so used to the ringing in your ears that you no longer hear it... What people don't know is... that they can also get rid of the ringing in their ears."[41]
Think back. This afternoon, there were many moments when you no longer heard your ears ringing. It is difficult to remember things that did not happen. But the ringing has stopped. But because there was nothing there, you don't remember it... What matters is to forget the ringing and remember the time when you didn't hear any ringing. And that is a process you can learn. Now rely on your body... You can enjoy really pleasant feelings, pleasant sounds and pleasant silence."[42]

The fact that pastoral care can also be systemic and hypnosystemic is not entirely new. The question is therefore not so much whether hypnosystemic pastoral care is possible. The question is rather whether healing or alleviating physical suffering through "words that work"[43] , if proven effective in hypnosystemic therapy, can also be part of pastoral care. As a contribution to an answer, I would like to determine whether there is evidence that words, as they can be used in pastoral care, have such an effect.

The healing effect that words can have is controversial, especially in the case of tinnitus. The focus of most hypnotherapists is currently not on reducing the noise in the ears, but on better coping with the phenomenon. In the Turkish study mentioned above, we learn: "At the end of therapy, all patients reported feeling happy and strong and having better control over their tinnitus. The tinnitus symptoms persisted in all cases, but they no longer severely affected the patients"(45). Other approaches, such as tinnitus retraining therapy[46], pursue a similar objective.

While I fundamentally approve of the focus on changing how people deal with tinnitus, I am even more interested in how the hearing characteristics of the test subjects change over the course of the therapy and what can be learned from this for future treatment strategies.

4 The Heidelberg pilot study – background to our study

In 2007, together with Heidelberg neuroscientist Peter Schneider, I conducted a small-scale pilot study with four test subjects and comparatively few parameters to measure the effects of hypnosystemic work with tinnitus sufferers.

---

[41]Erickson & Rossi 2001, p. 140ff. Erickson uses the word "tuning": "You have ringing in your ears, but you haven't thought of tuning them so you don't hear the ringing", Erickson & Rossi, 1979, p. 104.
[42]Ibid., p. 155ff.
[43]Title of the hypnosystemic pastoral care training course in Berlin and of the book from which the case studies in 2.1 and 2.2 are taken (Domanski, 2022).
[44] For possible goals of tinnitus therapy, see Chapter 9.
[45] "At the end of the therapy, all of the patients reported feeling happy and strong and said that they had better control over their tinnitus. The tinnitus symptoms continued in all cases but they no longer severely affected patients' lives." Yazici et al., 2012, 8.[46] Ross, 2024, p. 87ff.

4.1 Experimental procedure

The experiment at that time proceeded as follows[47]:

1. Psychoacoustic pre-measurement
2. Anamnesis interview for hypnotherapeutic training (30 min)
3. Hypnotherapeutic training (60 min)
4. Psychoacoustic follow-up measurement after training
5. Psychoacoustic follow-up measurement several weeks after the training Re 1.

Pre-measurement of psychoacoustics

The tinnitus frequency and volume, the ability to distinguish frequencies and the ability to distinguish volumes in a frequency range close to the tinnitus tone were measured.

To measure the tinnitus frequency, the test subjects were played comparative tones, which they corrected using the commands "higher" and "lower" until they matched the pitch of their tinnitus. To measure the tinnitus volume, the test subjects were played tones of varying loudness at this frequency until it was determined as accurately as possible which volume was sufficient to mask (drown out) the tinnitus. Frequency discrimination was measured as follows: The test subjects listened to three tones in succession, two of which had the same frequency and one of which was higher. Their task was to identify which of the three tones was the highest. If the test subjects answered correctly, the sub-step was gradually reduced; if they answered incorrectly, the difference was increased again. The difference threshold was measured by repeatedly switching the frequencies played back and forth around the threshold value (i.e. the tone interval that could just be distinguished or could no longer be distinguished). Volume discrimination was measured using the same method, except that instead of the frequency, the volume was changed in one of the three tones.

Re 2. Anamnesis interview

The following questions were asked: Name and age of the test subjects, pitch of the sound or sounds, tone of the sound, side of the symptom, age, possible triggers and persistence of the symptom, moments of intensification and maintenance, penetrating nature of the sound and variance in volume.

Re 3. Hypnotherapeutic training

Several hypnotherapeutic interventions were incorporated into a one-hour conversation. As a rule, no hypnotic ritual was used to induce a deep trance; instead, only spontaneously occurring trance effects were used (hypnosystemic approach).

4. Psychoacoustic follow-up measurement after the experiment

After the one-hour training session, the measurements taken before the conversation were repeated and compared with the measurements taken before the experiment.

Re 5. Psychoacoustic follow-up measurement several weeks after the experiment

After several weeks, the measurements were repeated and compared with the previous results.

[47] The following statements are largely taken fromwww.hsb-westpfalz.de/tinnitusversuch0 and the following pages.

4.2 Therapeutic interventions

The following interventions were primarily used in the experiment:

1. The experimenter informs the test subject that noise does not represent reality and silence does not represent the absence of noise, but rather that silence represents reality, while noise is merely a reduction in silence.

2. After each individual intervention, the experimenter asks the test subject to indicate the degree of silence achieved on a ten-point silence scale.

3. The experimenter asks the test subject to visualise the sound of silence. He asks him to change the visualisation in terms of shape, colour, size and distance.

4. The test subject is asked to use an imagination exercise to take the noise to a place where something sounds exactly like the noise in their ear, such as a beehive or a motorway. There, the test subject leaves the noise as an object and walks away.

5. Similarly, the subject is asked to take the noise back to the time it originated, to appreciate the good reasons for its origin, to leave the noise in that time and to return to the present without it.

6. The test person is asked to search their memory for a time before the symptoms arose or another symptom-free time, to experience it intensely, to picture it, and to take everything that has proven itself with them when they return.

7. The test subject is asked to imagine a mixing console with sliders on which they can control all aspects of their hearing. Then experiments are conducted to determine what differences they can imagine and with what intensity. Everything that proves effective is accompanied by a posthypnotic suggestion that they can repeat it consciously and unconsciously at any time in everyday life.

8. Tinnitus-related metaphorical stories are read aloud to the test subject.

9. The experimenter reads the lyrics of Simon and Garfunkel's song "The Sound of Silence" to the subject and refers to a message in the lyrics to his unconscious.

10. The experimenter refers to an area of life in which the subject is active as an instructor or teacher or in which he has attained a high level of mastery. Then the two ears are designated as teacher and student in this area. The experimenter engages in a dialogue with the subject about how the teacher ear imparts its skills to the student ear.

11. The experimenter asks the subject to imagine a ten-storey silent skyscraper with a silent lift. Gradually, different floors are visited from bottom to top and differences are noted.

12. The experimenter demonstrates how bodily sensation can be numbed through hypnotic anaesthesia and discusses with the subject the possibility that his unconscious mind knows how to achieve the same effect in the area of hearing.

13. The experimenter expresses the expectation that what has been achieved will become unconscious and intensify, and that there will be a training effect through conscious and unconscious application of the methods that have proven useful.

4.3 Overview of results

Overall, two subjects achieved a complete resolution of their symptoms and two achieved a reduction to about two-thirds of their initial value. The subjects who achieved complete resolution are both musicians, suggesting a possible connection

between musicality and the success of the therapy. In these two subjects, a reduction in accompanying hearing disorders, especially the reduced ability to distinguish frequencies, was also noticeable. In one of them, the ability to distinguish volume levels also improved. All improvements occurred immediately after treatment. Subsequent measurements showed some more favourable and some less favourable values. Overall, the results achieved immediately after treatment were largely maintained over the following weeks. All test subjects were chronic patients.

- In the first test subject (12 dB for 2 years), a reduction to 6 dB, i.e. half the initial value, was possible after one hour of treatment. After a few weeks, the volume had risen to 10 dB: a reduction to 8–9 dB was achieved, i.e. a permanent reduction to 2/3 to 3/4 of the original volume. The initially impaired ability to distinguish pitches in the frequency range of the tinnitus improved two to fivefold.

- In the second test subject (11 dB for 5 years), a permanent and complete elimination of the tinnitus was possible in a one-hour session. Only one of the original three partial noises returned rarely; he was then able to turn it off at any time. The ability to distinguish pitch and volume in the frequency range of the tinnitus was improved.

- In the third test subject (2 dB for a good 3 years, "very annoying"), complete elimination of the tinnitus was possible in a one-hour session, and the ability to distinguish frequencies was then significantly improved in some cases. Three months after the trial, she reported that the positive effect had remained until then. Currently, after attending a rock concert, a sound is present again. She assumes that she will be able to resolve it again using the methods she has learned.

- In the fourth test subject (15 dB for 38 years), it was possible to reduce the tinnitus by a third to 10 dB within an hour. Follow-up measurements eight weeks later showed a further reduction in tinnitus to 8 dB, i.e. to about half the initial volume. Both the ability to distinguish frequencies and volumes was improved by about twice as much at the tinnitus frequency.

4.4 Conclusion

The experiment [...] showed that hypnosis techniques can resolve the disorder even in chronic cases. In other cases, a permanent reduction in symptoms is possible. Surprisingly, in addition to the actual tinnitus, accompanying [hearing] disorders were also improved: in the vicinity of the tinnitus frequency, the ability [...] to distinguish between sound frequencies and volumes is significantly increased."[48]

Something has happened here that, according to the predictions we find in the literature, should not be possible at all. We would now like to investigate this phenomenon in a more differentiated study, both in terms of the number of test subjects and the accuracy and breadth of the measurement methods.

---

[48] Hammel, 2009b, p. 223f. Corrected misprint: The original text says "decreased" instead of "increased", which is factually incorrect and does not make sense in context.

5 Design of the current measurement experiment

Using tinnitus as an example, this study examines whether and how words, which also have a place in pastoral care, contribute to physical healing and how such a change can be measured in modern, scientific terms. To this end, we have developed a comprehensive experimental design using neurophysiological, biometric, voice and hearing measurement methods and appropriate questionnaires. The collection of quantitative and qualitative data serves the purpose of verifying the effectiveness of hypnosystemic work in tinnitus. A further result should be to determine how strong or weak the correlations are between subjectively and objectively measured loudness and between subjectively experienced and objectively recorded stress reactions.

We are also interested in whether magnetoencephalographic measurements (MEG) of brain activity are a suitable measuring instrument for determining changes in tinnitus volume and frequency, as well as hearing ability and stress levels.

The test subjects with tinnitus symptoms were offered a one-and-a-half-hour therapy session to reduce the stress they experienced. Data on changes in brain activity was collected as part of a pre- and post-measurement and a subjective questionnaire.

- brain activity
- the activity of the heart and the autonomic nervous system,
- musculature and vocal range,
- sound perception and hearing thresholds,
- tinnitus frequency and volume,
- emotional stress and intrusiveness of tinnitus

6 Sample

The subjects who participated in the study were mainly recruited through a request posted on the forum (mailing list) of the German Milton Erickson Institute for Clinical Hypnosis. Other individuals came forward through recommendations from therapists on the aforementioned list, through recommendations from colleagues, and from subjects who had already been recruited. Twenty-seven individuals (9 female; 13 musicians, average age 53.8 ± 2.1 years (SEM: standard error; range 28-66 years) were tested in a pre- and post-treatment state. The average duration of tinnitus to date was 13.6 ± 2.5 years (range 0.7-41 years).

The interval between MEG measurements (see section 12.1) was 7.2 ± 1.1 days. The auditory discrimination tests, psychoacoustic measurements of tinnitus frequency and loudness, and completion of the tinnitus questionnaires (see 11.4, 11.5 and 11.7) were also completed on the same days. The HRV measurement, vocal spectrum analysis and subjective scaling of tinnitus loudness (see 11.2, 11.3 and 11.6) took place on the day of treatment, at intervals of 2-3 hours.

7 Exchange of information with the test subjects prior to the experiment

The potential or future test subjects were informed of the following:

"We are looking for participants (aged 20-70)

- with chronic tinnitus
- with no psychiatric or neurological abnormalities.

Topic:

Dissertation on the effectiveness of hypnosystemic therapy for tinnitus.

Test subjects: Individuals with chronic tinnitus, without psychiatric or neurological abnormalities.

Number of subjects: 20-50, depending on how uniform or differentiated the results are to be described (at 5-10 measurement dates in 2024)

Conducted by:

Prof. Dr. rer. nat. Peter Schneider, University of Graz and Hearing Academy Heidelberg (www.musicandbrain.de)

Stefan Hammel, doctoral candidate at the University of Paderborn, hypnotherapist (MEG), systemic therapist (IGST/hsi), hospital chaplain (www.stefanhammel.de).

Procedure:

- The subjects are offered a 1 to 1.5-hour tinnitus therapy session with qualitative and quantitative pre- and post-tests
- are measured before and after therapy:

Neurological:
-- Brain activity (MEG = magnetoencephalography, a few days before and after therapy)
Psychoacoustically: Noise intensity and quality, by playing comparative tones:
-- Tinnitus frequency
-- Tinnitus volume
-- Audiometry (hearing threshold tests)
Stress experience:
-- Measuring heart rate variability Subjective
emotional impairment:
-- Scaling of stress according to personal experience

Requirements/offer:

- No costs for therapy (approx. 1-1.5 hours)
- No reimbursement of expenses, no expense allowance
- The therapy is filmed for internal purposes (documentation).
- Snacks, drinks, interesting encounters with the project team
- The survey of the test subjects is conducted in advance, mainly by e-mail.
- Visits to the MEG laboratory at the Heidelberg Head Clinic to measure magnetic currents in the brain and collect other data (estimated 1-2 hours each)
- A stay in Kaiserslautern (Palatinate) for therapy and to measure further values (estimated 3-4 hours).

Who is interested in participating in the study or knows any test subjects who might be interested?
who might be interested?

In a subsequent email, they were asked to complete the following questionnaire.

Questionnaire for the tinnitus study (Stefan Hammel and Prof. Peter Schneider)

Name

Address

Telepho

ne E-

mail

1. Do you experience...

    1.1 Tinnitus on the left (yes/no)

    1.2 Tinnitus on the right (yes/no)

    1.3 Tinnitus on both sides (yes/no)

2. More of a tone or a toneless noise (or both)?

3. Permanent or only sometimes?

4. Since when?

5. How old are you?

6. What is your occupation, or what was your occupation when the tinnitus first appeared (if you would like to tell us)?

7. Was there an obvious reason/trigger for its development?

    7.1 Do you have a hypothesis about triggers or causes?

8. Are you left-handed, right-handed, neither, or both (ambidextrous)?

    8.1 Which ear do you usually hold your mobile phone to when making calls?

    8.2 Was this different before the tinnitus noise started?

9. Do you have any injuries to your hearing organs or a diagnosed hearing impairment or hearing loss on the side with the tinnitus?

    9.1 Do you have noise sensitivity (hyperacusis)?

    9.2 If hearing impairments have been detected, would you be able to provide us with copies of any diagnostic documents (audiometry tests, etc.)?

10. Relevant for MEG measurement (measurement of brain waves when listening to sounds outside the head, non-invasive, without contrast agents, without radiation of any kind): Do you wear fixed metallic (ferromagnetic, i.e. containing iron, copper or nickel)

parts such as implants, pacemakers or non-removable braces? If so, what exactly are they and what material are they made of? (Non-ferromagnetic metals such as silver, gold, titanium, etc. are not critical.)

11. Would you like to tell us anything else (in brief/summary) about your experience of noise (origin, permanence, sound, psychological stress, etc.)?

12 Do you have or have you had any neurological disorders? (Stroke, cerebral haemorrhage, MS, Parkinson's, etc.?)

    12.1 If so, do the symptoms in question still persist?

13. Have you been treated for any psychiatric disorders in recent years (depression, anxiety disorders, obsessive-compulsive disorders, mania, psychosis, etc.)?

    13.1 If so, are you currently experiencing the associated stress?

13.2 Have you been diagnosed with ADD/ADHD, autism or giftedness?

14. Have you been or are you currently active in music for a long period of time?

14.1 As a professional musician? As an amateur musician?

14.2 If so, do you sing? Which instruments do you play? Thank

you very much for your participation and information!

During recruitment, only patients with chronic tinnitus (lasting longer than 6 months) were admitted to the study. Patients with neurological or persistent psychiatric disorders were excluded from the study.

PART 2: TREATMENT

8 Models for the development and treatment of tinnitus

In earlier centuries, it was assumed that divine or demonic influences, witchcraft or the thoughts or words of absent people were responsible for the noises in the ears[49]. Today, we can say: "The primary source of noise lies within the organism"[50]. The question remains: *where* in the organism?

Until the turn of the millennium, many scientists assumed that tinnitus originated in the hair cells of the cochlea[51]. According to current knowledge, the causes lie primarily in the processing in the brain. Reference is made to a basic electromagnetic activity in the auditory cortex, with impulses that resemble noise signals. For reasons that are unclear, these signals are not filtered out by the brain in people with tinnitus and reach conscious hearing[52]. This describes the current field of research into the causes, but a precise explanation is still pending:

> "With regard to tinnitus, it is often stated that its pathophysiology has not yet been fully clarified. In fact, there are many pathophysiological models for tinnitus (which are not mutually exclusive), but none of them can comprehensively explain all the relevant clinical aspects of tinnitus."[53]

Helmut Schaaf distinguishes between the symptom of tinnitus as such and the condition of tinnitus and outlines five predominantly psychologically oriented explanatory approaches to the condition (Schaaf, 2017, 30ff.). The models I offer below serve pragmatically as a guide for therapeutic work.

"The map is not the landscape, but if the map resembles the structure of the landscape, it is useful."[54] The same applies to any model. It should not be confused with the thing itself, which is more complex than the model represents it. However, reducing complexity when creating models can be beneficial for understanding what the model describes. Models can be treated as adequate until they are replaced by better ones. Assuming this is the case, the development of tinnitus noises can essentially be traced back to three interacting causes.

8.1 Origin in the brain and nervous system

In patients with tinnitus, the primary auditory cortex (Heschl's gyrus) on the side of the affected ear (on the ipsilateral side of the brain) shows a constriction, either because the gyrus is particularly narrow overall or because it is specifically narrowed in the area where the sounds in question are processed[55]. This could be understood to mean that the brains of the patients concerned have a reduced processing capacity for the corresponding frequencies.

Fig. 1 shows the auditory cortices of two musicians, one with and one without tinnitus, and a non-musician with tinnitus. The auditory cortex of talented musicians is wider than that of less musical people and

---

([49]) In ancient Babylonian, Greek and Roman cultures, and possibly in the Old Testament (cf. chapters 10 and 78), tinnitus was associated with the numinous. Steiner, 2012, 27ff.
[50]Serres, 1998, p. 139.
[51] See, for example, Steinriede, 2002, p. 35.
[52] Bartens, 2011, Steiner, 2012, p. 236, Nowak, 2024, p. 39.
[53] Langguth et al., 2024, p. 250.
[54] "A map is not the territory it represents, but, if correct, it has a similar structure to the territory, which accounts for its usefulness", Korzybski, 1994, p. 58.
[55]Schneider et al., 2009. Image source: Schneider, 2009.

often multiple lobes[56]. A narrow or locally constricted auditory cortex means an increased predisposition to developing tinnitus on the same side (on the left side in the second musician, on both sides in the non-musician)[57].

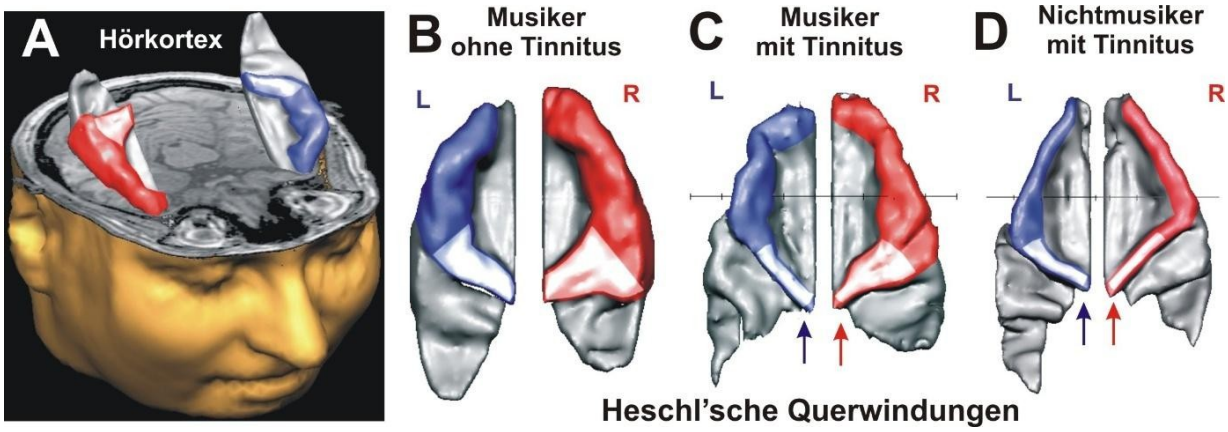


Fig. 1: Auditory cortices (Heschl's gyri, Heschl's transverse convolutions) of people with and without a predisposition to tinnitus

Tinnitus sounds occur in the frequency range of a hearing dip (scotoma) in the air conduction hearing threshold, often where the decrease in the hearing threshold is steepest. In pathological terms, tinnitus frequencies are often found at the edge of a zone of frequency-specific hearing loss [58].

One explanatory model is that in its effort to make frequencies with lower information density ("hearing loss") sound as loud as the adjacent frequencies, the brain overlooks the fact that there is only slight hearing loss at the tinnitus frequency and therefore lowers the hearing threshold for this range as well. This model is based on the idea that the auditory nerves initially send a flood of stimuli ("noise") to the brain at all frequencies, whereby irrelevant information tends to be ignored by the brain, i.e. responded to with a silence impulse.

Another model that is consistent with this is that the area of the brain that produces sound (or promotes it by not covering it with silence) and the area that perceives sound or marks it as a disturbance do not communicate with each other.

In our 2007 pilot study, we observed that a reduction in accompanying hearing loss, in other words, a lowering of the hearing threshold through training effects, apparently led to a reduction in tinnitus volume in the medium term in various test subjects compared to external sounds played to them (see above, chapter 3). In other cases, there is an impression that working on reducing tinnitus noises led to a lowering of the hearing threshold[59]. Instead of talking about partial hearing loss in a pathology-oriented way and assuming a linear causality (tinnitus as a result of impaired sound processing), one could talk about a control loop in which the adjustment of the hearing threshold, the generation and perception

---

[56] On average, the primary auditory cortex (see section 12.1) in musicians has 130% more grey matter volume than in non-musicians, Schneider et al., 2002.

[57] Schneider et al., 2009.

[58] Over 90% of tinnitus patients show abnormal hearing test results, Sedley, 2019, Biswas & Hall, 2021. In fact, there appears to be an absolute correlation (100%) between tinnitus and an altered hearing curve; lower rates may be due to less accurate measurement methods (Schneider, verbal communication on 27 November 2024).

[59] During the study, one test subject reported that the sound had become louder at one stage during therapy – but that my voice was also louder now. As I had not intended or noticed any change in the volume of my voice, the simplest explanation is that the man's hearing threshold had changed. This also corresponds to the results of the follow-up measurements: the test subject's hearing threshold had improved by around 20 dB in the low range. Another test subject with significant hearing loss reported twice towards the end of the session that my voice had become louder. As she was leaving, she said, "The tinnitus is a little quieter now, but more importantly, I can understand you properly now; that's much more important." In the follow-up measurement the next day, her hearing threshold had decreased by up to 15 dB.

ear noises influence each other and the development of symptoms is triggered by external factors such as stress.

One goal would then be to increase the flexibility with which these attitudes can be involuntarily regulated and, ideally, brought into balance.

Hypnotherapy suggests directing attention in such a way that the tinnitus sounds are suppressed. Interventions of this kind include those described in 10.1 and 10.2.

In addition to interventions to block out partial tones, interventions to raise the hearing threshold in the affected frequency range are also possible. This also reduces the subjective volume of tinnitus.
Interventions for regulating tinnitus frequency and volume as well as the hearing threshold can be found under 10.3 to 10.6.

It also makes sense to give suggestions that can help improve the processing of sounds on the relevant side of the brain. Interventions of this kind include those described in 10.7.

Visualisation techniques are used to avoid effects in the sense of the paradox "Don't think of blue" (or: "I must not pay attention to the sound"). The therapy therefore takes place in the visual rather than the acoustic experience. Examples can be found under 10.8.

Accordingly, the therapeutic work can be shifted from the acoustic to the physical or emotional experience. Interventions of this kind can be found in 10.9 and 10.10.

8.2 Development in the area of bodily functions

Patients with tinnitus often experience muscle tension, including in the facial area. Common comorbidities include sleep disorders, sudden hearing loss, teeth grinding, jaw clicking, dizziness, shoulder and neck pain, and headaches. The tension can impair the functioning of the ossicles and, indirectly, the hair cells in the inner ear, thereby altering the transmission of incoming sound information.

The ear is connected via the nervous system to the jaw, neck and facial area as well as to the vocal cord muscles. The facial nerve stimulates the muscles of the stapes and vocal apparatus, the trigeminal nerve stimulates the malleus, and the vagus nerve with its branches comprehensively stimulates the outer and middle ear as well as the laryngeal muscles that cause the vocal cords to vibrate. According to our observations, hearing improvement is accompanied by an improvement in the resonance spectrum of the voice, suggesting an interaction between hearing and voice. The connection between hearing and the vocal apparatus is referred to as the audio-vocal loop, while the connection between hearing and the motor system is referred to as the audio-motor loop.

In addition to muscle tension, injuries to the outer, middle and inner ear can also lead to hearing loss or alter the information that reaches the auditory cortex.

In hypnotherapy, it makes sense to use suggestion to relax and loosen the muscles and reactivate the hair cells. Interventions of this kind can be found under 10.11.

The sleep disorders observed in many tinnitus sufferers are likely to impair the regeneration of the nervous system and are often accompanied by depressive disorders[60]. Sleep disorders

[60]While sleep disturbances and early awakening are usually seen as a side effect or consequence of depression, Asnis et al., 2021 describe them as a cause, thus closing the circle: "[Tinnitus] often becomes chronic [...] contributing to significant psychiatric consequences [...like] comorbid insomnia. The latter can predispose affected persons to depressive episodes and a worsening of their overall functioning." Asnis et al., 2021, p. 65.

In the context of depression, they may (in my opinion) be promoted by muscles tense with anxiety (and possibly increased blood pressure due to constricted vessels).

According to clinical observation, depression is associated with reduced body awareness. This includes a strikingly low ability to perceive and describe differences in sensory impressions. As a result, it becomes difficult or impossible to distinguish between comparatively pleasant and less pleasant experiences. According to my observations, this applies to body awareness and, consequently, to the experience of emotionality, but also to visual and presumably acoustic stimuli[61].

Hypnotherapy suggests reconditioning the sleep behaviour of those affected so that they sleep more deeply at the first signs of waking up. Clinical experience shows that the depressive tendencies of test subjects often reduce significantly within a few days [62].

Improved sleep could promote the nervous system's ability to regenerate and relax the muscles, as well as the ability to recognise differences in physical and auditory experiences, thereby improving the involuntary regulation of sensory functions. The perception of differences – even in the involuntary realm – is constitutive for deciding what serves one's well-being. Interventions to improve sleep behaviour can be found under 10.14.

8.3 Development in the area of biographical experience

When patients with tinnitus are asked, "How long have you had these symptoms? And what else was going on at that time?", it is very common to learn that conflicts, traumatic experiences or other forms of stress had reached a peak at that time[63]. It therefore stands to reason to assume a connection between such stress, physiological reactions to it (e.g. in the form of tense muscles) and the development of tinnitus[64].

Together with the accompanying hearing loss, tinnitus can be described as a freezing of the otherwise flexible hearing characteristics. It therefore makes sense to describe tinnitus and the associated hearing loss as part of a chronic traumatic freezing reaction

---

[61] People whose depressive attitude dissipates relatively quickly during a therapy session report, for example:
"The room is brighter now." "I see more colour." "I see the room more three-dimensionally now." When asked, they regularly confirm that their body awareness is now more differentiated.

[62] Hammel, 2017, p. 107f.

[63] Hammel, 2016, p. 26. Studies with military veterans suffering from tinnitus suggest a link between post-traumatic stress disorder and the development of tinnitus, cf. Clifford et al., 2019, Fagelson, 2007, Moring et al., 2018. A meta-study found that most of the 30 studies evaluated on the comorbidity of tinnitus and psychiatric diagnoses "showed significant associations between tinnitus and psychiatric symptoms, particularly anxiety, depression, stress, insomnia, stress and, in some cases, psychosis" (Arsenault et al., 2025).
See Kranz 2017, p. 51: "The problem- and conflict-oriented hypnotherapeutic approach seeks to identify the complaints, conflicts, conditions, experiences and influences from the patient's past or current life situation that (contribute to) causing tinnitus and attempts to find possible, necessary and creative approaches to change and resources."

[64] "Under stressful conditions, pre-existing weaknesses (hearing impairment, tinnitus) are most likely to flare up, so that psychological factors can also manifest themselves unconsciously in the organic substrate: it is as if the patient projects their suffering onto the organic level" (Steinriede, 2002, p. 36). Accordingly, "stress, depression, insomnia, anxiety, tension, etc. can have an amplifying effect on tinnitus" (Steinriede, 2002, p. 35). "The risk of suffering from persistent tinnitus is higher if there was increased psychosocial stress, anxiety, sleep disorders or dissatisfaction with life at the time of the initial onset of tinnitus." Ross 2024, p. 13 with reference to Olderogg et al., 2004, Vielsmeier et al., 2020.
A meta-study on the comorbidity of tinnitus and depression, based on 20 studies classified as relevant, concludes that:
A total of 64 studies were identified, of which only 20 met the inclusion criteria and only 2 were case-control clinical trials. The majority of the studies (n = 18) found that depression is associated with tinnitus, either as a predisposition – resulting in poor adaptation to tinnitus – or as a consequence of severe disease. The connection can be interpreted differently (possibly on a case-by-case basis): “An overall assessment of all of the selected studies suggests at least 3 possible associations between depression and tinnitus: depression affecting tinnitus, tinnitus predisposing individuals to depression, and tinnitus appearing as a comorbidity in patients with depression. There is a high prevalence of depressive symptoms in individuals with tinnitus, but the mechanisms by which depression and tinnitus mutually interact are not fully understood” (Geocze et al. 2013).

("freeze reaction", often associated with tension, high blood pressure, memory and concentration problems, depression, anxiety disorders, etc. as consequences of trauma).

Acute stress can, of course, be based on preceding chronic stress. It can be observed, for example, that many tinnitus sufferers tend towards perfectionism, self-discipline and a way of thinking and acting that could be described as "compulsive". By
"Compulsive" means the radical pursuit of certain values while involuntarily neglecting others, accepting disadvantages in order to avert what is perceived as impending guilt. In principle, all attitudes and personality structures that promote chronic muscle tension can contribute to tinnitus[65].

In the context of phobias, it has been observed that avoidance of the phobic object by those affected contributes to a lack of experiences that could prove that the object is actually harmless[66], while the confusion of fear and danger among those affected reinforces the appearance that the danger is real and the fear is relevant[67]. In obsessive-compulsive disorders, it has been observed that suppressing feared impulses contributes to them occurring more intensely and frequently[68]. Similar to a phobic or compulsive avoidance reaction, attempting to avoid or combat the tinnitus sound could possibly contribute to maintaining the noise. Based on this assumption, the deliberate, conscious, focused perception of the ear noises in the sense of a paradoxical intervention (through attempted amplification or regular monitoring of the noise)[69] could contribute to their reduction. For some sufferers, meditating on the ear noise is also a possible form of exposure therapy. This type of intervention can be found under 10.5.

Hypnotherapy offers suggestions for resolving the relevant biographical stress or for making rigid attitudes more flexible. This can be done, for example, with methods from the spectrum of parts work and constellation work. Such interventions are listed as examples in 10.12.

Biographical burdens can also be resolved with the help of stories that enable a new interpretation of the situation or give a negative sequence of events a happy ending in a way that the patient accepts and finds consistent with their own experience.
Instead of discussing the stressful original situation, the use of anecdotes and parables (usually referred to as "metaphors" in the relevant literature) is often particularly useful here.
Interventions of this kind can be found under 10.13.

Interventions that promote a reduction in perfectionist, self-disciplining or compulsive behaviour can also be valuable. Useful interventions for this can be found under 10.3 and 10.12 to 10.18.

It is also useful to offer suggestions that change the interpretation of the situation and thus the emotional response to the tinnitus. Interventions of this kind can be found under 10.15.

The results of therapeutic work can be improved by suggestions to increase the plausibility of interventions or reduce the plausibility of objections, as well as by posthypnotic suggestions for further development. Interventions of this kind can be found under
10.16 and 10.18.

---

[65] "Many perfectionists suffer from tinnitus due to self-generated stress and have great difficulty coping with the noises in their ears." "The rigid pursuit of perfection is kept going by the fact that the extremely high goals seem achievable. However, in order to achieve these goals, basic needs such as sleep, food, balance, connection and inner peace are often extremely neglected. If one remains caught in the perfectionist pattern, the organism, which is geared towards survival, ultimately has no choice but to pull the ripcord with symptoms such as tinnitus, burnout or heart palpitations." Nowak 2024, 62, 63f.

[66] Claudia Weinspach in Hammel et al., 2020, p. 13.

[67] Hammel et al. 2020, 142f., Hammel, 2022, p. 62ff.

[68] Hammel, 2011, p. 241.

[69] For various types of paradoxical interventions, see Hammel, 2011, p. 237ff.

9 Treatment goals

At first glance (or at first listen), the goal of tinnitus treatment seems clear: get rid of the sound! In fact, however, it is not clear what it means for the sound to be "gone," nor whether the disappearance of the noise is the only or even the best possible goal of tinnitus treatment[70].

9.1 Various possible goals The goal

of tinnitus treatment is...

- either to reduce or eliminate the perceived noise
- or their subjective suppression
- or the reduction of emotional stress reactions when hearing the noises;
- a further goal may be to reduce accompanying hearing loss (lowering the hearing threshold) or, conversely,
- Masking the noise by reducing sensitivity to noise in the relevant frequency range (raising the hearing threshold).

An overarching goal is to make hearing characteristics more flexible. This includes, among other things, the rapid adaptation of hearing to changing external conditions, such as when moving from loud to quiet environments and vice versa.

It often proves beneficial to pursue several of these goals simultaneously or sequentially.

9.2 Reduction of noise perception, raising or lowering the hearing threshold

When it comes to reducing noise perception, there are three different measures of loudness.

I refer to the tinnitus volume in comparison to physically measurable external noises (e.g. a pre-recorded tone) as the absolute (objective) volume (sound pressure level / SPL) in decibels (dB). This value plays a minor role in the personal experience of the test subjects, which is why we usually concentrate on the following two variables.

I define relative (objective) loudness (sensation level / SL) as the measurable loudness above the current hearing threshold. Relative loudness is described in decibels (dB) above the hearing threshold.

---

[70] As stated in Chapter 3, many hypnotherapists do not consider reducing or eliminating the noise to be a possible goal. Rüdiger Steinriede writes: "Wanting to eliminate tinnitus is an exaggerated goal... Processing tinnitus emotionally is the realistic therapeutic goal." (Steinriede, 2002, p. 154f.). The authors of a Belgian study refer to the goal of "reducing the annoyance of tinnitus" and reducing the level of stress and anxiety that many experience, Maudoux et al., 2007, p. 75. Ross recommends that patients aim to "remove the negative mental and emotional connotations associated with tinnitus, thereby creating the conditions for it to fall below the threshold of consciousness." The goal is therefore a dissociation comparable to the "permanent tactile stimulus of our clothing," which we block out in everyday life (Ross, 2024, 77, 88ff., p. 142.).
According to our observations, partial or complete resolution of tinnitus (even when consciously listening) can be achieved in many chronic cases within a single therapy session (see sections 3.2 and 13.1). Outside of this study and the previous pilot project, I have also often witnessed the resolution of tinnitus in a single session. Two of these cases have been published as documentary videos (Hammel, 2019b). In November 2022, at the annual conference of the Swiss Society for Medical Hypnosis (SMSH), I demonstrated tinnitus therapy with complete resolution of chronic noise with a medical colleague. Approximately 35 doctors from various disciplines (including ENT) were present. Regardless of this fundamental possibility, the other objectives mentioned should also be pursued in order to find a good solution for patients who may find a mere reduction in volume (or no perceived reduction in noise) unsatisfactory.

I define subjective loudness as the individually described tinnitus loudness on a scale of 0-10. This correlates much more strongly with relative loudness than with absolute loudness, but also seems to depend on the degree of emotional stress and noise sensitivity. The phenomenon whereby the subjective loudness of a sound can be significantly higher than its relative loudness is referred to in scientific literature as recruitment and in medical diagnostics as hyperacusis. A therapeutic goal for hyperacusis patients with and without tinnitus is to reduce noise sensitivity.

The hearing threshold – i.e. the physically measurable volume at which we hear a sound – is regulated by the body as needed. This means that we can hear quieter things in one situation than in another. The relative and subjective volume of tinnitus can therefore be...

- by reducing the absolute tinnitus volume (compared to external noises) or
- by raising the hearing threshold (at least in the range of tinnitus frequencies).

The two variables (absolute tinnitus volume and hearing threshold) are interactively linked, without being strictly dependent on each other. It can be observed that changes in one of the variables also bring about changes in the other.

If the body lowers the hearing threshold while the tinnitus volume remains constant in comparison to external sounds (absolute volume), the tinnitus is perceived as louder. If the hearing threshold is raised while the absolute tinnitus volume remains constant (i.e. in comparison to external sounds), the tinnitus is perceived as quieter or disappears completely. Therefore, the first step is to work on lowering the absolute tinnitus volume. If it appears that the hearing threshold is also lowering, so that the relative tinnitus volume does not decrease (or does not decrease to the same extent as the absolute volume), work can be done on raising the hearing threshold in the range of the tinnitus frequencies.

However, desensitisation to acoustic stimuli, which is accompanied by an increase in the hearing threshold, has an ambivalent component. Although this reduces or eliminates the tinnitus (its relative volume), it may also result in the loss of desired acoustic information. Therefore, the first step is usually to work on reducing the absolute volume of the tinnitus and then, if necessary, on increasing the hearing threshold.

In addition to the fact that (in absolute terms) quieter noises in the ear can be perceived by those affected as being equally loud or louder, a second factor makes it difficult to assess the extent to which the therapy goals have been achieved.

In the course of most tinnitus therapies, it becomes apparent that the noise in the ear is composed of several or many partial tones. When the loudest tones are eliminated during treatment, quieter tones at a different frequency remain. If these are above the current hearing threshold for the frequency in question, they are immediately amplified and focused on by those suffering from tinnitus. In therapeutic practice, feedback such as the following is often heard:

- "The sound is still there."
- "The sound is quieter now."
- "The sound is different now."
- "The sound is now higher/lower."
- "Part of the sound is still there, another part is gone."
- "Now I hear a noise in my other ear"

Feedback on the loss of partial sounds can therefore vary greatly. Often, the only comment is: "It's still there." In other cases, the change is presented as a shift in symptoms. The fact that individual frequencies have been lost often only becomes apparent when precise feedback is obtained through various questions. Enquire

When the therapist asks directly, "Could it be that one partial tone has disappeared and another is now in the foreground?", he regularly receives answers such as, "Yes, I think that's right."

It should also be noted that tinnitus noises that appear to "disappear" end up below the frequency-specific hearing threshold regulated by the brain due to a change in hearing settings, where they may have already existed (unnoticed by conscious perception) before the onset of tinnitus. In principle, the noises can return (e.g. under the influence of psychological stress) and disappear again through a renewed change in hearing characteristics. The overarching goal is therefore not to switch off sounds, but to flexibly regulate the perceived volume in relation to the current hearing threshold for this frequency[71].

Interventions for masking tinnitus noises can be found in 9.3-9.10 and 9.12, among others.

9.3 Masking of the noise through "forgetting"

The relationship between conscious and unconscious experience can be described figuratively as follows: Imagine someone walking through a dark forest with a torch. They can direct the beam of light, narrowing or widening it, but they cannot illuminate the entire surroundings at once. Conscious experience corresponds to the area that we illuminate with the torch at any given moment. Which area this is can change from moment to moment. The areas that lie in darkness are unconscious. In addition to the areas that are sometimes in darkness and sometimes illuminated, there are also those that we have never illuminated before and those that we cannot easily illuminate (such as the inside of mouse holes).

Stimuli that affect us can be perceived unconsciously or consciously to varying degrees. If stimuli are maximally dissociated (i.e. only perceived unconsciously), we do not perceive them even when we try to focus on them intentionally. This applies to most people most of the time when they try to feel their bowel movements or hear the sound of blood in the artery next to their eardrum. Extensive dissociation can be said to occur when perceptible content is almost never consciously experienced but can be perceived with appropriate focus of attention. This applies, for example, to the swallowing and eyelid closure reflexes and the heartbeat.

In an anechoic chamber, almost anyone can experience tinnitus[73]. Not hearing tinnitus can therefore be understood as the brain's ability to block out such noises from conscious experience. Tinnitus noises can also be dissociated completely, partially or not at all. For people who find such noises distressing, blocking them out over long periods of time can be a great benefit[74]. Possibly

---

[71] At a tinnitus workshop at the Parts Therapy Conference in Würzburg in 2021, I couldn't find any test subjects. I asked an intern if I could demonstrate what I would do if she had tinnitus, and she agreed, saying, "Yes, that's funny: I used to have tinnitus." I asked her: "Imagine what it would sound like if it were there, so clearly that it seems to you as if it were there." After a very short time, she reported that she could hear the noise again. Soon afterwards, it disappeared again during the demonstration of the method. Of course, it is more challenging to train the hearing of people with chronic tinnitus and possibly high emotional stress accordingly.

[72] The metaphor of a torch beam in a dark environment to describe processes of consciousness goes back to Jaynes, 1988.
W. to Jaynes, 1988.

[73] 94% according to Heller, Bergman, 1953, 82% according to Bo et al., 2008.

[74] This objective is the focus of Ross, 2024, pp. 77, 88, 142. Detlef Kranz states that the goal is to "develop more serenity towards the tinnitus in order to counteract further (over)sensitisation... so that the noise can eventually be completely blocked out or so that one can remain calm and unimpressed when perceiving it" (Kranz, 2017, p. 50), in line with the objectives of 8.3 and 8.4.

Partial dissociation (temporary "forgetting") in the process is also a preliminary stage to complete dissociation.

Interventions aimed at achieving this goal can be found in sections 9.1, 9.6 and 9.12, among others.

9.4 Reducing emotional stress

One goal of therapy is to change the mental and emotional response to the noises in the ears. Even if the noises do not disappear, almost all those affected consider the problem to be solved if it is no longer associated with emotional stress. Although some test subjects only partially acknowledge this at the beginning of therapy, the resolution of emotional stress can certainly be considered a good result.

Uwe Ross, for example, reports on a tinnitus sufferer who went to a "miracle healer" and asked him to help him get rid of the noise. The healer was astonished by his request. The healer said that "only very special people" developed such a noise in their ears and that he could be proud to be distinguished by such an experience. He should try his hand at dowsing, which was certainly something he was good at. The person concerned then tried his hand at dowsing, with good success. He now began to look at his noise with pride and no longer wanted to get rid of it[75].

When the emotional stress associated with the noise by many people dissipates, the phenomenon is no longer experienced as limiting. In fact, there are some people who have loud tinnitus in absolute terms but do not find it disturbing because they do not associate any emotional stress with it. Other people have tinnitus that is relatively quiet in absolute terms but find it extremely disturbing because they react to it with negative emotions. In addition, emotional stress can lead to even the relative volume of the noise being overestimated (recruitment, see section 8.2). Emotional relief can result in increasing dissociation from the noises in the ears[76].

Interventions to pursue this goal can be found in 9.2, 9.6, 9.10 and 9.12-9.15.

10 Treatment methods

Hypnosystemic work is based on a fusion of Ericksonian hypnotherapy, systemic working methods and aspects of psychodrama or parts and constellation work[77]. A characteristic feature of all three approaches, but especially of Ericksonian hypnotherapy, is a high degree of individualisation of the therapy. Erickson's statement on the nature of psychotherapy, which treats each person as a unique personality, has become well known:

> "Every person is an individual. Psychotherapy should therefore be defined in such a way that it meets the unique needs of each individual, rather than treating people as

---

[75] Ross, lecture at the SMSH Annual Congress in Balsthal, Switzerland, 2023. The Demotic Papyri of London and Leiden, an Egyptian text from the 4th century BC, states that a boy who responds to the ritual incantations of a magician with ear blades is suitable as a medium for prophecies, as the gods speak through him. Steiner, 2012, p. 27 with reference to Griffith & Thompson, 1904. In other ancient cultures, too, tinnitus was associated with the numinous, cf. notes 10 and 50.

[76] Ortwin Meiss reports on a test subject who initially found the noises completely unbearable and who initially succeeded in identifying the source of his anger in childhood traumas and then, in a sense, became friends with the noise. Shortly afterwards, "the patient reported that he did not know exactly whether the tinnitus had really become quieter, but that he often no longer heard it, and when he did, it was less disturbing," Meiss, n.d., chap. 16.

[77] Hammel, 2022, p. 19, Schmidt, 2005, p. 9.

trimmed to fit the Procrustean bed of a hypothetical theory of human behaviour."[78]

Hypnosystemic work has adopted the concept of utilisation from Erickson. This means that the (often stressful) initial experience of the conversation partner is not combated, but rather used creatively by incorporating elements of it into the therapy to overcome the stress. This is also linked to an attitude of fundamental appreciation on the part of the therapist for everything that the conversation partner brings to the table. This also applies to symptoms behind which good intentions and values of the organism are suspected, even if the implementation strategy with which these are to be promoted is fraught with side effects and ineffective. According to Ericksonian and hypnosystemic[81] understanding, tailoring the therapy to the unique subject promotes the effectiveness of the therapy.

It is inevitable that a study dealing with the effectiveness of hypnosystemic working methods must offer subjects a programme that is precisely tailored to their individual personality, situation and symptoms. Offering all subjects an identical programme would not only reduce the effectiveness of the work. It would mean that no hypnosystemic work would have been offered. In my understanding, the same applies to pastoral care. In my opinion, it is in accordance with the commandment of charity to regard every person I encounter as unique in their life situation and with their life experience. A stereotypical equal treatment of people as if they were interchangeable would not be a pastoral attitude.

Hypnosystemic counselling works with perceptions and imaginations that generate expectations of physiological change in the other person, which have the potential to make this change actually and permanently tangible. In our context, this means that imagination should trigger the expectation of a resolution of the stress in such a way that the stress is experienced as actually reduced or disappeared.

As described, this can happen in three ways, namely by the noise...

- is heard more quietly or not at all, even when the test subjects pay attention to it,
- can still be heard, but is more often blocked out and "forgotten" or
- continues to be noticed, but no longer causes emotional disturbance.

The following list of therapeutic interventions used in the study is not exhaustive. It mainly lists interventions that are typically used to treat people with tinnitus symptoms.

10.1 Suggestion for involuntary noise suppression

In 9.3, it was pointed out that people can block out tinnitus noises to such an extent that they rarely notice them, much like we are hardly ever aware of our swallowing or blinking reflexes, although we can perceive them when we focus on them. We "forget" such perceptions as long as we do not expect to gain any additional information from close observation.

---

[78] "Each person is an individual. Hence, psychotherapy should be formulated to meet the uniqueness of the individual's needs rather than tailoring the person to fit the Procrustean bed of a hypothetical theory of human behaviour." Zeig, 1982, vii, cf. Zeig, 1998. In Greek mythology, Procrustes is a host who welcomed his guests with open arms. In the evening, he laid them in an iron bed that was tailored to his own body measurements. If his guests were too tall for it, he chopped off their limbs; if they were too short, he stretched them until their joints broke. The main thing was that they fit into the bed.

[79] Hammel, 2009, p. 286ff., Hammel, 2011, p. 16ff., Hammel, 2012b, Hammel, 2022, p. 55ff.

[80] Hammel, 2016, p. 30.

[81] Schmidt 2024, p. 28f., Hammel 2022, p. 30f.

Various interventions are used to achieve precisely this type of forgetting for tinnitus noises.

1. A conversation is held about unconscious bodily reactions such as the swallowing reflex, blinking, heartbeat, bowel movements and environmental stimuli that we successfully block out[82].

2. Metaphors are offered to illustrate how most concertgoers (unlike critics) block out the mistakes made by musicians [83] and how the eye blocks out irrelevant details if they do not contribute to understanding the whole [84]

3. In response to the presumed ambivalence between the desire to hear accurately and the desire to block out unwanted sounds, both sides of the ambivalence are acknowledged and reflected (ambivalence pacing, therapeutic double bind)[85]. One way to do this is, for example, to send a message to the ear: "You can beep a little, but leave me alone!"[86]

4. A conversation is held about how we ignore filler syllables ("uh – um – uh") [87].

5. In paradoxical communication, subjects can be reminded of how often they have already forgotten their tinnitus and that the only reason they don't remember is because they have forgotten how often they have forgotten their tinnitus[88].

6. The active, vivid recollection of the listening experience in the time before tinnitus can be used to reinforce "learning to forget"[89].

10.2 Shifting the focus of attention from noise to silence

Those affected who suffer emotionally from tinnitus often focus their attention very strongly on the noise they hear. If they succeed in viewing the noise as irrelevant (or valuable), this helps them to block it out more often. Suggestions that shift attention away from the noise and onto its opposite, i.e. peace and quiet or silence, are useful here [90].

1. The conversation begins with a refocusing (framework suggestion as part of clarifying the goal): "You want a quiet ear, am I right?"[91] .

2. Silence is defined as the actual reality – and noise as its absence[92]**.**

---

[82] For details, see Hammel, 2011, p. 90ff. (also cited without attribution in Kranz, 2017, 101f.). See Meiss, n.d., chap. 15: "Therapeutic stories that involve blocking out other unwanted stimuli (e.g. chronic and acute pain) can help patients understand and apply meta-strategies for focusing their attention." In a series of examples, Erickson refers to professions, tribes and individuals who, due to their lifestyle habits, find what we would consider uncomfortable to be comfortable and vice versa, concluding: "And you can get so used to the ringing in your ears that you no longer hear it." Erickson, Rossi 2001,
p. 141.

[83] Hammel, 2006, p. 76

[84] Hammel, 2009, p. 81f.

[85] Hammel, 2011, p. 218, cf. Short & Weinspach, 2007, p. 250ff., Schmidt, 2004, p. 186, 196 et al., Erickson & Rossi, 2001, p. 66ff.

[86]Hammel, 2017, p. 131.

[87]Hammel, 2009, p. 83f.

[88] The intervention comes from Milton Erickson: "Think back; this afternoon there were many moments when you no longer heard your ears ringing. It is difficult to remember things that did not happen. But the ringing stopped. But because there was nothing there, you do not remember it." Erickson & Rossi, 2001, p. 155.

[89] "What matters is to forget the ringing and remember the time when you didn't hear any ringing." Erickson & Rossi, 2001, p. 156.

[90] Cf. Hammel, 2009, p. 267f.

[91]Hammel, 2022, p. 176.

[92] Hammel, 2006, p. 279f.

3. The participants are first asked what they consider to be the opposite of loudness or noise: silence? Calm? Quietness? After each intervention, they are then asked to rate on a scale the level of "quietness", "silence" or "calm" that they have already achieved[93].

4. The conversation partner is asked to listen very consciously to the noises in their ears, to perceive their emotions as accurately as possible, to acknowledge them, to describe them and, if necessary, to intensify them. They are then asked to perceive and describe as accurately as possible what has changed in their emotions since the first description. Focusing on and describing stressful emotions and acknowledging their existence and validity can help to resolve them[94].

10.3 Metaphors for regulating tinnitus characteristics and hearing threshold

Tinnitus is accompanied by hearing loss or misregulation of the hearing threshold in the surrounding frequency ranges. An analogy can be drawn with syndromes in which both numbness and pain are experienced, or weak stimuli can trigger severe pain[95] (e.g. polyneuropathy) or to post-traumatic stress disorders in which both emotional numbness (depression, depersonalisation-derealisation syndrome) and emotional pain (anxiety) are experienced.

The metaphors presented here can be used as instructions to the brain to flexibly regulate the volume and frequency of tinnitus as well as the hearing threshold.

They can also be used as instructions to the body to re-regulate functions such as muscle tension, breathing, heart activity and blood pressure, as well as instructions to the psychological and social experience to re-regulate the handling of ambivalences (compulsive behaviour, perfectionism, internal and external conflicts).

Viewed in this way, one goal of therapeutic or pastoral care work is to reactivate flexible self-regulation of both hyperreaction (tinnitus) and hyporeaction (inflexibly elevated hearing threshold).

The following interventions are used for this purpose:

1. The tinnitus sufferer is taught that noise from another region of the brain is entering their auditory space and that their brain must "close the door properly" in order to banish the noise from it[96].

2. It is described how an organ builder fixes a "howler" (unwanted continuous tone) caused by a warped valve mechanism on an organ pipe[97].

3. The topic is how we sometimes only notice small stars in the night sky out of the corner of our eye, but not when we look directly at them[98] .

---

[93]Hammel, 2011, p. 84.
[94] Hammel, 2014, p. 238ff. Cf. Short & Weinspach 2007, p. 242: "Paradoxically, acceptance can be used as a compelling force for change."
[95] "The analogy between tinnitus and neuropathic pain has already been the subject of extensive attention... [A] common feature is abnormal stimulus perception: allodynia and hyperalgia *[meaning: hyperalgesia]* in the case of neuropathic pain, and hyperacousia for tinnitus." Maudoux et al., 2007, p. 75, cf. Vincey et al., 1999, Moller, 2000, Folmer et al., 2001.
[96] Hammel, 2017, p. 135f.
[97] Hammel et al., 2018, p. 74f.
[98] Hammel, 2011, 92ff, p. 244.

4. The metaphor of the sound engineer or mixing desk or the image of the volume control is used. In this context, a "silence control" can also be introduced, which raises the hearing threshold for the frequencies of the previous tinnitus.

5. The image of a silent lift is also used, in which each floor represents a higher degree of silence [100]. To express that different noises are regulated separately, lifts can be described that are configured so that visitors can travel to different floors independently of each other.

6. In addition, the metaphor of flooding a reservoir is used as a suggestion for raising the hearing threshold. The test person is first asked to imagine the ear noise as a landscape element at the edge of the lake's water surface, e.g. as reeds blowing in the wind, a ruin or a pile of rubble. They are then asked to send a technician to the control room in the dam wall. The technician is to regulate the water discharge so that the reservoir continues to fill. When the water level is above the designated landscape element, the technician can press a button to keep this water level constant regardless of the weather conditions (rain or drought).

7. As a metaphor to stimulate the self-regulation of hearing, valves or similar technical devices can be discussed.

8. The metaphor of ecological balance can also be used to stimulate self-regulation[102].

9. The metaphor of mediation in a conflict between two people or groups can be used[103] to regulate the ambivalence between the options of "hearing a great deal" (precision, i.e. maximising the amount of information) and
"hearing only the essentials" (clarity, i.e., reduction of information to the essentials)[104] .

10.4 Psychoeducation for regulating tinnitus characteristics and hearing threshold

Models for the development and elimination of ear noises can be explained to the conversation partners, which implicitly contain suggestions on how their body can overcome the problem. Explanations such as the following can be used for this purpose.

1. The explanatory models from 8.1 to 8.3 are used.

2. Tinnitus is explained to those affected as a malfunction of the hearing in the peripheral area of a zone of hearing loss; a frequency range that is not affected by hearing loss has been accidentally set louder together with the neighbouring frequencies. The auditory cortex is suggested to distinguish the frequencies and volumes more precisely than the part of the brain that generated the sounds[105]:

3. Milton Erickson's account of a tinnitus patient can be used, as he learned in a self-experiment to make some (meaningless) things quieter and at the same time

---

[99] Hammel, 2022, p. 217f., cf. Hammel et al., 2018, p. 43f.; Hammel, 2006, p. 76, Hammel, 2020.
[100] Hammel, 2011, p. 90.
[101] Hammel, 2006, p. 53.
[102] Hammel, 2022, p. 220, Hammel, 2023, p. 28.
[103] Hammel, 2022, pp. 80, 119.
[104] This may indirectly train the resolution ability of pitch perception and, if applicable, the differentiation of the number of partial tones in the frequency range of the tinnitus.
[105] Hammel, 2017, p. 133ff.

hearing other (more important) things louder, with the conclusion "that it is possible to learn to hear only certain things if you adjust your ears accordingly" [106].

4. The test subject is told that in order to resolve tinnitus, the brain must first identify the sound precisely, and that this can sometimes be a challenge. The good news is that the brain can train and learn to identify and distinguish frequencies more and more accurately [107].

5. The test subject is told: Somewhere in the brain, there is someone who produces this exact sound. So, the person who has the task of 'muting' the sound just needs to ask the person who produced it what kind of sound they produced, i.e. which button they pressed, so to speak. The only question is how the two get to know each other and communicate with each other.

6. The test subject is told that tinnitus noise usually consists of different partial noises, which typically represent stress reactions from different periods of life. Because the different partial noises are associated with different stressful events from different periods of life, they sometimes need to be treated differently. It is therefore easier to regulate them down individually than to try to quiet them down simultaneously and collectively.

7. A subject who doubts whether what is good now will still be good later is told about a particularly careful physicist who, when asked, "Have the sheep in the Lüneburg Heath already been sheared?", replied, "Not on the side facing me." Equating the subject's scepticism with the physicist's seemingly exaggerated scepticism encourages the subject to be sceptical about his own scepticism.

8. The test subject is told that tinnitus arises from an ambivalence of the body: more precise hearing provides more information, i.e. greater precision of perception, with the disadvantage of possible background noise, i.e. reduced clarity. Less precise hearing reduces the information to the essentials, with the potential advantage of greater clarity and the disadvantage of missing information, i.e. reduced precision.

10.5 Exercises for regulating tinnitus characteristics and hearing threshold

Tinnitus sufferers can be invited to participate in practical exercises that can help to regulate or block out ear noises.

1. People interested in Far Eastern meditation or martial arts practices can be given a concentration or meditation exercise. They are asked to focus their attention entirely on the tinnitus sound in phases, to welcome it and to perceive it more and more accurately[108]:

2. Musical people with high-frequency tinnitus can be given the homework assignment of clinking crystal glasses together and listening to the timbres they perceive, the overtones they can distinguish, which of these match their tinnitus, and how long they can hear the sound. By training the ear to improve pitch and volume discrimination in the range of the tinnitus, both the tinnitus and the accompanying hearing loss can be reduced[109]. Similarly

---

[106] "You hear a ringing in your ears, but you haven't thought to adjust them so that you don't hear the ringing." Erickson & Rossi, 2001, p. 140, cf. p. 156.
[107] Hammel et al., 2018, p. 79f.
[108] Hammel, 2011, p. 88. On "meditating on sounds," see also Ross, 2024, pp. 202ff.
[109] Hammel, 2020.

Church bells can be used by musical people to identify and resolve tinnitus.

3. A therapeutic "homework assignment" for reactivating previously successful strategies was mentioned at the beginning of the case study in section 2.3: "If any remnants of the previous state were to reappear..., then I would ask you to... do the things... that we did today."

10.6 Therapeutic greetings

"Therapeutic greetings" are a form of ultra-short hypnosis without trance induction. The therapist addresses one side of the subject in the third person, for example by saying: "Say hello to your brain (ear, auditory cortex, unconscious, etc.)..." [110] . Possible examples include...

1. a "greeting to the brain" with the request to raise the hearing threshold in the area of the ear noise,
2. a "greeting to the body" to stabilise the therapeutic results was mentioned in the case study under 2.3: "Say a nice greeting to your body, this has come to stay",
3. a "greeting to the ear" in accordance with the intervention from 10.1: "You can beep a little, but leave me alone!" [111] :
4. A greeting in line with the intervention from 10.3, that the brain should "close a certain door properly" in order to seal the listening room against noise[112] ;
5. A greeting corresponding to the intervention from 10.4: "Tell your auditory cortex... to regulate the frequencies and volumes in this range more finely so that it regulates the distinctions in the generated hearing more accurately than those in the generated sound" [113].
6. A greeting that the brain of the tinnitus sufferer can increasingly and for longer periods of time, and eventually almost always, ignore, block out and forget the noises, in the same way that it has long done with many other bodily or external noises.
7. A greeting that the listener's brain can explore the noises with curiosity and a spirit of inquiry.
8. A greeting to the body with the message that the test subject trusts and believes in it.
9. A greeting to the sleeping self, to sleep more deeply at the first signs of the previous emotionally (in the context of depression, grief, anxiety) induced awakening[115].

10.7 Let the symptomatic side learn from the symptom-free side

People with unilateral tinnitus are given the suggestion that the side experiencing tinnitus can learn from the side experiencing silence. People with tinnitus noises on both sides

---

[110] Further "greetings" on the regulation of tinnitus can be found in Hammel, 2017, p. 128ff.
[111] Hammel, 2017, p. 131.
[112] Ibid., p. 135f.
[113] Ibid., 133f.
[114] "Now rely on your body. Trust it. Believe in it. And be sure that it will serve you well." Erickson to a tinnitus patient, Erickson & Rossi, 2001, p. 156.
[115] Hammel, 2017, p. 107ff.

It is suggested that each side can learn from the other how it has managed not to hear the respective noises coming from the opposite side[116].

1. The metaphor of a right-left conference can be used for this, where a transfer of know-how takes place between the experts on both sides of the body[117]

2. The special skills of a tinnitus sufferer in the areas of work and hobbies can be utilised by metaphorically referring to them as a student learning from their master in the relevant area of expertise. The symptomatic ear is identified with the student and the comparatively symptom-free ear with the teacher[118].

3. The skills of parents can be utilised by viewing the symptom-free and symptomatic ears as a mother (or father) who teaches their child to walk or imparts another skill to them[119].

4. The person affected is told that walking involves not only the two legs, but the entire musculature and nervous system. Therefore, the alternating movement of the legs when walking is accompanied by alternating stimulation of the two halves of the body. The body can use this to initiate a dialogue between the two halves of the body and thus also between the ears, so that the ears learn from each other. The tinnitus sufferer can be instructed to combine the alternating movement of the legs with an imagination of how the ears discuss their issues with each other and compare their skills[120].

10.8 Transformation from acoustic to visual experience

Techniques that visualise the tinnitus sounds as shapes with a colour and form have proven to be extremely effective[121].

1. Tinnitus sufferers are asked if the therapist may pull the sounds out of their ears. The therapist then uses pantomime to demonstrate how he pulls the sounds out of the left and right ears like a rope or net. He asks what colour, structure and thickness they have and how these characteristics change as he pulls more and more of them out. Usually, the colours become paler or more transparent, the structure becomes smoother, drier or frayed, and the thickness of the ropes or net-like structure decreases until little or nothing remains. At the same time, the noise experience is reduced[122].

2. The conversation partners are asked what the sound would look like and where it would be if they could see it visually. If, for example, it is a pointed triangle, the therapist asks where the point is pointing. If it points inwards, he asks the

---

[116] This approach was developed by Rosemarie Dypka from Hamburg. She writes: "I discovered this approach 'by chance' when I was unable to help a tinnitus patient. He had already suffered six episodes of sudden hearing loss and was referred to me by his secretary. He simply couldn't 'repair' his ringing ear through hypnosis. Then I had the idea of asking him how his healthy ear worked. This was so astonishing to him and so far outside his perception that he was able to explain to me exactly how it worked 'properly'. The next question was whether the diseased ear could learn something from the healthy ear. And, as you have also experienced, this worked really well. Regarding the technique: I then ask how exactly the information must reach the affected organ. Sometimes something flows from the healthy to the diseased, sometimes the healthy expands, sometimes complicated technical solutions are developed (e.g. laying cables). I have had amazing experiences, e.g. with a man with unilateral testicular pain, a woman with a spastic leg (birth defect)..., a stroke patient with walking difficulties in one leg and, again and again, tinnitus." Dypka, email dated 4 October 2010.
[117] Hammel, 2017, p. 139, Hammel, 2022, p. 221f.
[118] Hammel, 2022, p. 228, cf. Hammel, 2009, p. 84, Hammel, 2011, pp. 90f., 123ff.
[119] Hammel et al., 2018, p. 28.
[120] Hammel, 2011, p. 62f.
[121] Further techniques for visualising ear noises in Ross, 2024, p. 190ff.
[122] Hammel, 2022, p. 283f.

Conversation partner, turn them outwards or determine which orientation suits them best[123]. The result is often a resolution of the ear noise or partial tones. If the conversation partner describes the sound as light, the colour and luminosity or the location and orientation of the light can be changed, for example.

3. Tinnitus can be interpreted as an interesting sound in a landscape: one woman, for example, saw the noise in her ears as the "bubbly, comforting sound" of a steaming whirlpool bath she was soaking in. Robert Schumann described his tinnitus as "music sung by angels"[124]. Tinnitus sufferers are asked to name their associations with possible sources of noise and then to change the associated landscape image if necessary. If it is a beehive, the therapist can ask them to move the beehive to another location. Alternatively, noises can be imagined, whereby the noise is interpreted as part of an instrumental piece or a natural scene[125]. If a patient mentions a circular saw, the speed can be adjusted and eventually set to zero. It can also be pointed out that this is a "cartoon" created by the brain. The therapist then suggests that the inner director can redesign the circular saw in any way they like, for example by transforming it into a liquid [126].

4. People with unilateral tinnitus are asked to use a rope to mark a circle on the floor that represents the sound and emotional experience associated with the symptomatic ear. They are then asked to use another rope to mark a place that represents the silence and pleasant emotional experience of the other ear. They are asked to step into this circle (the "resource circle" or "solution circle"), describe this experience and recharge themselves completely with it. They are then asked to step over into the other circle ("the problem circle") with this experience, bring it with them and fill the other circle with it. The process can be repeated if necessary, or the persons concerned can be asked to bring more and more of the experience of the "resource circle" via a Bring the "invisible pipeline" into the previous "problem area" until it has reached the same good condition here as it had previously experienced over there[127].

5. A tinnitus sufferer may also be asked to imagine that they could place the noises as visible material into a basket presented in front of them. What does the material look like? What colour is it? The therapist can then ask them to imagine a person stepping out of them who is suitable for taking the basket and delivering the tinnitus material to where it originated (in terms of time and, if applicable, people). Once everything has been delivered, the time traveller can gather peace and quiet on the way back and bring it to the (former) tinnitus sufferer[128].

6. It is also possible to visualise the sound as an element of the landscape, as in the reservoir metaphor in 10.3.

10.9 Transformation from acoustic to physical experience

Tinnitus noises can be imaginatively shifted from the acoustic to the kinesthetic and motor sensory channels. As a model, one could say that the body wants

---

[123] Hammel, 2011, p. 90.
[124] Schneider, 2009, p. 220.
[125] See Hammel, 2009, p. 110f.
[126] Hammel, 2006, p. 165, Hammel, 2009, p. 256, Hammel, 2022, p. 243ff., Hammel, 2023, p. 48ff. On the transformation of ear noises into imagined landscapes, see also Kranz, 2017, p. 96f.
[127] Hammel, 2022, p. 259f.
[128] Hammel, 2014, p. 124ff.

express something important to him, but he can do this in different ways and can be prompted to change the mode of his expression[129]. In the following, two variants of the procedure are presented, one with an explicit shift of the symptoms to another part of the body and one with a focus on the type of bodily sensation that corresponds to the ear noise in question.

1. The person being counselled is asked to move their tinnitus to another part of their body, for example to their big toe. Any residual noise can then be moved to the other toes, fingers or feet. The counsellor asks how the toe in question now feels different. The conversation partners often report that the toe feels thicker, warmer, more present, tingling, etc. When the counsellor asks, "What is different in your ear now than before?", it is often found that parts of the ear noises have disappeared. The sensation caused by this shift in the toes is not usually described as unpleasant by those affected. Nevertheless, it is also possible to imaginatively shift this experience further into the floor, causing the altered sensation in the toes to disappear[130].

2. The conversation partner is asked how they would experience their ear noise if they could transform it into a physical sensation or reaction. They are then asked to feel this sensation or impulse so clearly that the physical experience in question seems real to them. The test person may reply, for example, that they would then experience a lump in their throat or itchy skin. Afterwards, the tinnitus is often reduced. In a next step, the conversation partner can be asked to imaginatively change the bodily experience in question, which can lead to further improvement.

10.10 Transformation from acoustic to emotional experience

The tinnitus sufferer is invited to imagine the following: "If it were possible to transform your ear noise into an emotion, what would it be? Would it be, for example, fear, anger, helplessness, disgust, shame or guilt, or an emotion-like experience such as rigidity, paralysis, numbness or something else entirely...?" If the person names an emotion or a state associated with emotions, the therapist asks further: "Where do you feel this anger (etc.) in your body? How does it feel there? Can you perceive it clearly?" After the person has answered, the therapist asks: "What has happened to the noise in your ear? What is different now?" As a rule, the noise in the ear that had previously been in the foreground and was transformed into this emotion has disappeared.

The procedure is repeated several times. If necessary, the conversation partner is asked to repeat the procedure over the next few days with any residual sounds[131].

10.11 Metaphors for muscle relaxation and the functionality of the auditory organs

A variety of metaphors can be used to help relax the muscles and optimise the functioning of the auditory organs.

1. The story is told of how a watchmaker opens the spring box of a watch or gramophone, carefully reduces the pressure on the spring and replaces it[132].

---

[129] Rüdiger Steinriede suggests transforming the tinnitus noise into a taste or a movement, but does not expect this to change the perceived noise intensity. Steinriede, 2009, p. 710f., cf. p. 705.

[130] Cf. Hammel, 2011, p. 241.

[131] Hammel, 2022, pp. 275f., 288f.

[132] Hammel, 2009, p. 111f.

2. One could also recount how a father, while hiking with his child, places a dung beetle in their hand and instructs them to close their hand tightly. Dung beetles regularly manage to push their fingers apart and escape.

3. One can talk about how pressure is regulated in a steam engine and how important it is not to put too much pressure on the boiler, to let the engine rest from time to time and to maintain it regularly[134].

4. The functioning of a gyroscope can also be discussed. Gyroscopes were used in ships to keep candles, compasses and navigation equipment steady in rough seas. In aeroplanes, they are used to mark the horizon during turns in fog or at night. Modern electronic gyroscopes are used to keep images upright on mobile phones, as well as in navigation devices to continue to display the position of a vehicle when driving through tunnels without satellite reception. The gyroscope is used as a metaphor to restore the functioning of the balance system and stimulate the ossicles so that they function as desired again[135].

5. Humorously, it can be said that bristle mice move backwards through the ear canals with a slight twist to clean them. In particular, they can brush the hair cells to keep their fur smooth and supple for optimal hearing[136].

6. Erickson's series of examples can be used to show how the body learns to adapt to changes in external pressure (from air or water) and in doing so learns to quickly adapt muscle behaviour, blood pressure and breathing to changing external conditions. What the body learns in this way is stored as a physiological profile (as a
"body habit") and reactivated at any time as needed. It is beneficial to respond to the interests of the test person (swimming, diving, mountain hiking, flying, parachuting)[137] .

10.12 Therapeutic modelling

The methodology of therapeutic modelling is related to that of parts work and constellation work. A distinction is made between three basic interventions: **subtraction**, i.e. the spatial dissociation of problem-associated experiential content (as "personified options" or "people you can be"), **addition**, i.e. the spatial association and identification of solution-associated figures with the ego experience, and **transformation**, i.e. the conversion of problem-associated experiential content (figures, persons, options, etc.) into solution-associated experiential content. A special form of subtraction or dissociation is the dissolution of figures (or their appreciative removal from the space) insofar as they are associated with problem experiences.

1. Within the framework of subtraction techniques, perfectionist and sceptical instances of tinnitus sufferers can be dissociated from their ego experience, thus creating space for a new experience[138]. Representatives of the ear noises can be gathered in the space outside the conversation partner. Each of these persons can then be divided into two "sub-persons": to the right, for example, goes the person who has good intentions and represents values, to the left, the person who accepts and experiences symptoms. Afterwards, the representatives of the values can be imaginatively returned to the (previous)

---

[133] Hammel, 2009, p. 223.
[134] Hammel, 2009, p. 51.
[135] Hammel et al., 2018, p. 80f.
[136] Hammel, 2017, p. 129f.
[137] Erickson & Rossi, 2001, p. 154f.
[138] Hammel, 2017, p. 132.

Tinnitus listeners are invited in, while those experiencing symptoms are left outside[139]. Tinnitus sufferers can also be taught a technique whereby, when lying awake at night, they personify all the physical reactions, thoughts and emotions that prevent them from falling asleep, one after the other, until they fall asleep ("Fourteen Angels Game").

2. As part of addition techniques, for example, the version of the previous tinnitus sufferer can be invited into the room, "the person you would be if you had never had the problem and had never experienced the original stress triggers that may have contributed to its development, and who you then feel you are". The conversation partner is asked to describe this person vividly and then to stand in their place to experience what it is like to be them. The resulting positive experiences are stabilised as an experience "as it has always been and will always be"[141].

3. In the context of transformation techniques, sceptical instances are reassigned as scientific observers or ministers of confidence,[for] example. The instances in the conversation partner that hear tinnitus can be sent on a journey back to the time of its origin to relinquish the symptom there, or they can be regarded as "bodyguards" protecting the values of the affected person that were once hurt. They are then retrained so that they only sound the alarm with ear noises when exactly the same thing happens that was stressful when they originally began to hear tinnitus[143].

4. At the end of the process, the figures associated with the problem can be dissolved like genies in a bottle, sent on a journey, or simply deliberately overlooked and forgotten.

10.13 Trauma-therapy-oriented metaphors

In addition, trauma-therapy-oriented parables (often referred to in counselling literature as
These are often stories that recount a supposed or actual catastrophe and describe how people responded competently to it, thereby preventing a bad outcome or turning it into a positive one. It is important that such stories do not resemble the actual stressful experiences of the conversation partners too closely, but rather address experiences from other areas of life.

1. One could tell the story of a dog that was sedated by burglars and barked after waking up from the anaesthetic, even though the burglars were long gone. The dog was agitated until its owner came, spoke to it and calmed it down. Then it lay down, fell asleep again and was completely quiet.

2. You could also tell the story of a mountain village that was hit by a mudslide and severely damaged. The story tells how the residents return to their village after the flood, clear away the debris, restore the houses and streets as well as the destroyed bridge, take preventive measures against a possible further flood, erect a memorial to the disaster and finally celebrate a big festival. Similarly, there is a story about a villa in need of renovation.

---

[139] Hammel, 2019a, p. 164f., Hammel, 2022, p. 90f.
[140] Hammel et al., 2018, p. 98f.
[141] Hammel, 2019a, p. 245ff., 2022, p. 91f.
[142] Hammel, 2019a, p. 179ff., cf. Hammel, 2017, p. 57f.
[143] Hammel, 2019a, p. 171ff.
[144] Hammel, 2006, p. 77f.

which was lovingly restored by its owner, or of a historic church that was severely damaged by an earthquake and then rebuilt true to the original[145].

3. People who suffer from tinnitus can also be told a story about guards on a castle wall. After an intruder had caused bloodshed, they took the precaution of shooting anyone who approached the castle and might have a knife hidden in their clothing. After a short time, the lord of the castle invited them in because the castle was no longer receiving any food or craftsmanship support. He informed them that he had instructed the guards at the gate to search all suspicious and unknown visitors and that the wall guards only needed to shoot people who were proven to be attacking the castle with weapons. However, as this never happened, the guards decided to station only one of them on the tower, who looked around every quarter of an hour to see if there was any danger[146].

4. The metaphor of the fire alarm can also be used. If it is set so sensitively that it sounds constantly, it is useless. However, it should not be set so that it is never heard. A good fire alarm sounds when smoke or fire gives cause for alarm and not otherwise. The same applies to "good tinnitus".

5. The possibility of bringing visualised noises from an imagined time-travelling person to the places where they originated was already mentioned towards the end of 10.8.

10.14 Treat accompanying sleep disorders and depressive tendencies

It makes sense to treat sleep disorders and depressive tendencies in order to reduce their negative impact on tinnitus symptoms. Sleep disorders are one of the main symptoms of depression[148]. Depression can be described as a post-traumatic stress disorder.

1. Tinnitus sufferers can greet their "sleeping self" at the first signs of waking up in order to sleep more deeply, see 10.6.

2. As part of the subtraction process, the affected person can identify all the factors that prevent them from falling asleep or going back to sleep at night, see 10.12.

3. The affected person can be taught the strategy of adopting the attitude "I will try to stay awake a little longer; I must not fall asleep yet" [(149)]instead of "I must finally fall asleep now" as part of a self-experiment.

4. There are a variety of methods for treating depression, which cannot be discussed in detail here[150].

10.15 Changing the meaning

Another option is to give the previously negative noise a positive meaning, thereby reducing or eliminating emotional stress.

---

[145] Hammel, 2022, p. 240ff., Hammel, 2009, p. 62f., Hammel, 2023, p. 33f.
[146] Hammel, 2017, p. 136, Hammel et al., 2020, p. 83f.
[147] Hammel, 2017, p. 137, Hammel et al., 2020, p. 63.
[148] An overview of common causes of sleep disorders is provided by Hammel, 2011, p. 95f.
[149] Hammel, 2011, p. 97f.
[150] For hypnosystemic therapy for depression, see Meiss, 2016, Hammel, 2009, p. 152ff., Hammel, 2011, p. 147ff., Hammel, 2016, p. 70ff., Hammel, 2017, p. 72ff.

1. Utilisation as support for musical interests and talents: People with an interest in music who have tonal tinnitus can be asked to identify the exact tone. The musician can then consider how to use this tone as a reference tone to train their perfect pitch[151]. Similarly, people can be encouraged to use tinnitus tones as a basis for remembering pleasant music[152]. Musicians can be invited to use tinnitus tones as inspiration for improvisations and compositions[153].

2. Utilisation as evidence of the listener's spiritual gift. One example is the use of tinnitus as evidence of a special, valuable sensitivity in the tinnitus listener, as described in 10.4, where tinnitus is used as evidence of a special, valuable sensitivity in the tinnitus listener. A combination of this and the approach just mentioned is the reinterpretation of the sounds as "music sung by angels" mentioned in 10.8.

3. Use as a warning signal in case of possible overload: The tinnitus sufferer is informed that their ear is acting with good intentions and is probably trying to protect them from possible overload by producing the sound. One variation is to suggest that the subject enter into a contract with their ear to make this overload protection unnecessary. The contract reads as follows:

   § 1 The tinnitus sufferer agrees that when their ear resolves the noises, they will take at least as much care of themselves as if the noises were still there. This will not result in any disadvantage in terms of their ability to perform and act.

   § 2 The ear agrees to reduce the noises and to eliminate them immediately or gradually. The advantage for the body is that by eliminating the symptoms, energy is saved that can be better used elsewhere.

   § 3 If the previous tinnitus listener fails to fulfil their contractual obligations, the ear has the right to restore the noises at any time.

4. The person concerned is asked whether they agree to conclude this contract with their ear. Then they are asked whether their ear also agrees. Most people know exactly what the ear will answer. If necessary, renegotiation takes place here. If the ear agrees, the contract is concluded and the ear is asked to immediately reduce the noise. As a rule, this is what actually happens...

5. The possibility of utilising sound to recall situations of comfort or interest has already been mentioned under the heading "interesting noise in a landscape" in 9.8.

---

[151] Schneider, 2009, p. 220, see also Hammel, 2022, p. 183. American hypnotherapist Bart Walsh reports on a professional double bass player who feared he would no longer be able to practise his profession because of a noise in his ear. The first goal of the therapy was to reduce the emotional stress on the subject. Later, he asked the musician what tone his tinnitus had. The musician explained that he had not yet paid attention to this, but that he would find out. In the next session, he explained that it was exactly the "A" of the concert pitch. Walsh asked him if he could turn the sound down, turn it up if necessary to tune his instrument, and then turn it down again when he didn't need it. In the third and final session, the musician reported that he was able to do this and that the noise no longer bothered him (Walsh, email dated 5 January 2025).

[152] One of Erickson's patients said she worked in a factory where music was always playing and she wished she could hear that music instead of the noise in her ears. Erickson reports: "I asked her how well she remembered that music. She named numerous pop songs. I told her to use these sounds to quietly play these melodies in her head. Five years later, she said to me, 'I still have this quiet music in my ears.'" Erickson & Rossi, 2001, p. 157.

[153] Hammel, 2009, p. 110f. In the string quartet in E minor "From My Life," Smetana set his tinnitus tone to a double-sharp E on the first violin over a tremolo of the other strings. Steiner, 2012, p. 114, Schneider, 2009, p. 220.

10.16 Deconstructing scepticism, reinforcing the plausibility of therapeutic effectiveness

For the sustainability of the result, it is crucial that the test subject feels confident that the changes experienced are significant and lasting. This means that it is important to increase the subject's belief (whether logically justified or intuitively experienced) in the durability of the results and to reduce the plausibility of any objections. There are numerous ways of doing this[154].

1. The conversation partner can be invited to turn inner voices that object to the effectiveness of the procedure into silent observers, such as scientists who observe the further process without influencing it with interjections [155].

2. Sceptical individuals can be entrusted with a new task. For example, they are told that they have inadvertently contributed to the stabilisation of the acoustic phenomenon through negative autosuggestion (nocebo effect). As specialists in self-fulfilling prophecies, they are now invited to head the Ministry of Confidence and Optimism.

3. The conversation partner can be informed that sometimes two, five or ten per cent of the result is lost after the session, but that this can be remedied in a follow-up session. By focusing on a possible minor loss, the perceived plausibility of the effectiveness of the work is increased and prevents the previous tinnitus sufferer from experiencing a greater loss that could be caused by sceptical authorities[157].

10.17 Paradoxical intervention

1. The test subject is asked to turn up the volume of the tinnitus [158].

2. The test subject should check and document regularly, e.g. hourly, whether the noise really sounds the same as before.

3. The test subject is informed that the process may or should be slow in their case, i.e. that the noises may recede with a time delay and in small steps.

4. The test subject is told that they may like the tinnitus (and therefore keep it).

10.18 Posthypnotic suggestion

Statements in the style of a posthypnotic suggestion[159] create the expectation in the conversation partner that an unconscious dynamic may cause the noises to disappear in the period after the session.

1. Those who do not experience a satisfactory reduction in noise perception or any associated emotional distress at the end of the session are informed that the tinnitus sound often becomes quieter and eventually disappears completely not during the session, but in the days following it. This does indeed happen occasionally. My observation is that the percentage of people whose tinnitus still persists

---

[154] Further interventions with the same focus can be found in Hammel, 2022, p. 289ff.
[155] Hammel, 2017, 57f., p. 132f.
[156] Ibid., p. 58f.
[157] Ibid., p. 56.
[158]Hammel, 2011, p. 238.
[159] Hammel, 2011, pp. 124f., 216ff.

dissolves, increases significantly when this is announced as a possible or probable development and is therefore hoped for or expected by the persons concerned.

2. Alternatively, the person can be asked to imagine the noise becoming quieter so vividly that it seems almost or actually real to them. This sows doubt as to whether there is any difference in the mind between an imagination that already seems real and reality, since it could be that all reality is ultimately imagined. The areas and structures of the brain that we use to process current perceptions are actually the same ones we use to process imagined perceptions, so that the two merge seamlessly in the brain and a plausible imagination can regularly be the beginning of an experienced reality. Then the tinnitus sufferer is asked again how well they can already imagine the tranquillity in their ear as reality and whether they already experience it as reality. If this is not yet possible, it is explained that the rest of the process is often carried out by the unconscious during a phase of distraction, for example during sleep, so that they may only notice afterwards that partial tones or all noises have disappeared.

3. We inform tinnitus sufferers of the surprising therapeutic effect of the measurements. We ask them to pay attention to this effect and make use of the resulting placebo effect: in our earlier experiments, we played different tones to the test subjects in order to measure the volume and frequency of the noise psychoacoustically. Towards the end of the test, the tones played became less and less distinct and more and more similar to tinnitus. Afterwards, the symptoms improved in almost all listeners, with our measurement method apparently unintentionally becoming part of the therapy. As the test subjects became more familiar with their tinnitus, their brains learned to identify the source of the noise and switch it off[160].

4. It can be announced that the imagined improvement, which is being experienced more and more clearly, will transition unobtrusively into an initially ambiguous, then increasingly clear physical improvement.

5. In the event of partial success, positive expectations for the continuation of the session or the follow-up session can be encouraged. It can be recounted how Jesus performed a miracle as a process in stages. After the blind man he treated said only, "I see people walking around like trees" after the healing ritual, Jesus repeated the procedure until it was completely successful[161]. Conclusion: If even Jesus is not above performing miracles in stages, then so can we!

11 Three treatments

The following chapter illustrates, using three test subjects as examples, how their symptoms changed in the context of the one-and-a-half-hour session.

In the description of the course of treatment, the abbreviation "S" stands for the pastoral counsellor and therapist and "P" for the test subject. The numbers in brackets in the subheadings refer to the place where the respective intervention was described in general terms. "10.2, No. 1" means that a brief description of the intervention in question can be found in chapter 10.2 under 1.

---

[160] Hammel, 2011, p. 84. Peter Schneider told the participants in another experiment: "For the next measurement, I have added some silence to the noises. Please pay attention to that."
[161] Mk 8:22b-26.

Fig. 2: Treatment discussion with a test subject [162]

11.1 Ms W.

Ms W. is 65 years old and has been experiencing permanent bilateral tinnitus for 21 years as a very deep humming noise with a frequency of 70 Hz. The intensity of the noise varies depending on her level of tension, and she hears the noise particularly clearly in quiet environments. She suspects that work-related stress is the trigger. When the symptoms first appeared, she took over the management of a trauma clinic without any training, which was a completely new field of work for her with a heavy workload, great external and internal pressure, and challenging encounters. The noise does not cause her any particular emotional distress. In early childhood, the eardrum in her right ear was damaged by a middle ear infection, resulting in slight hearing loss on the right side. She finds it very unpleasant when parallel conversations take place in restaurants or when people clap at concerts (hyperacusis). Ms W. works as a psychotherapist and does not consider herself a musician. She came with her husband, who also signed up as a test subject for the study. They seem to treat each other with love and respect.

11.1.1 Course of treatment

Clarification of objectives with integrated framework suggestion (10.2, No. 1):

S: "You want silence in your ears, is that right?" P: "Yes. I love

silence."

S: "What would be *your* words for the best possible outcome?"

P: "I would like a little more relaxation and serenity, perhaps also more peace with myself."

Medical history:

S: When did these noises start?

---

[162] Image used with the permission of the test subject (none of the persons in 11.1 to 11.3). All photos: Stefan Hammel, except Fig 10 (MEG measurement): Peter Schneider.

P: That was in 2002, 2003, yes.

S: You said you used to run a trauma clinic. What was stressful or difficult back then?

P: It was the field of work. The pressure was very high, both externally and internally, with a large number of patients to care for. Leading group therapy sessions was new to me. It was a completely new field of work. I was completely new to it and then thrown in at the deep end without any training.

Psychoeducation (10.4, No. 1):

S: When we experience stress, our muscles tense up, our blood vessels constrict, our blood pressure rises, the supply of oxygen and nutrients decreases, etc. This affects the whole body, and when the muscles in the ear area tense up significantly, the ossicles can no longer vibrate as well. The ear canal is constricted, so the optimal input information no longer reaches the inner ear. People who then develop tinnitus have a predisposition, which means that their auditory cortex on the affected side is narrowed, at least in the area where the sounds in question are processed – either because it is narrow anyway or because it has a dent in that area, resulting in less processing capacity. In your case, this would be because you have a humming noise in the low frequency range. A predisposition does not mean that you have to develop the corresponding symptoms, otherwise you could have had them at birth, but something else has to be added. What is added are biographical stresses on a psychological and social level, such as conflicts and trauma, or stress reactions on a physical level, such as tense muscles, increased blood pressure, altered heart rate variability, etc.

Because the brain is always in the present, you can't really say that something that happened is over.

This can be seen in traumatised patients, who experience things as if they were happening now, even though outsiders say they happened in the past. Perhaps Mrs W., who has been through something difficult, has not yet realised that it is possible to reduce stress.

Therapeutic modelling / subtraction technique, part 1 (10.12, no. 1), paradoxical intervention (10.5):

Let's imagine that, as we sit here, the woman W. who had such a violent struggle back then and in whom what was so hard had somehow settled in her body could step out of you... and let's imagine that this woman W., who brought such stressful tension with her, is now standing here: what does she look like?

P: *(silence)*

S: I noticed a sudden twitch when you became aware of it. Your muscles suddenly relaxed in a small release, mainly from your left shoulder. To me, that would mean that the person who stepped out has quite tense muscles, including in the shoulder, back and neck area, but that certainly extends up through the jaw to the face. Is that how you would describe it?

P: Yes, that's how I would describe it. And it's a little more tense on the left than on the right. S: Okay. It's

hanging a little crooked there.

P: It's hanging a little crooked there, exactly.

S: How does she look? What is her emotional expression?

P: A little worried, uncertain. She wants to take everything in, so she's also kind of focused. S: Worried,

responsible...

P: Yes...

S: Wants to contribute, gives everything

somehow... P: Really wants to

understand...

S: Is it nice that she is there and you are here? Would you rather have her back or should she stay outside?

P: Yes, she wants to stay out there for now. It's okay...

S: It's a bit of a wild threat when I say we can bring her back...

P: Yes, it's a bit of a wild threat, exactly...

S: How can *you* tell that this is a wild threat and that it's not really nice when I suggest that we bring her back? You probably notice that there's a difference and that it's more pleasant to keep her out than if we were to bring her back? From the outside, *I* notice that your cervical spine has straightened up...

P: *(laughs and touches his left shoulder)*: Yes, it's getting a little easier here too...

S: ...and that you are more mobile from the middle of your back upwards into the shoulder-neck-throat-face area, and your voice seems to have become brighter. I hear more resonance in the high notes, it seems to me...

P: It seems that way, yes. – Yes, it *is*!

S: *I* also notice that you are breathing more freely. How can *you* tell that it is more comfortable this way?

P (stroking his left shoulder and left arm): This side is a little looser. This curve is actually better... *(stretches and beams)*

S: Great! You can feel that the left side is much looser! You now have a friendly, cheerful smile, which wasn't so noticeable before! You radiate more calm... I think your muscles are relaxing even more in waves... How else can you tell that it's different?

P: I don't know if I feel it directly, but one thought is: maybe I'm also a little more peaceful with myself.

S: I notice that you occasionally have this left-right jerking motion, as if the two sides of an ambivalence were in dialogue with each other... I'm just babbling as it occurs to me...

Therapeutic modelling / subtraction technique, part 2:

S: Let's say we were to isolate the woman W. in you who still has residual tension in her body, with further muscle tension from the hips down to the feet... can you imagine that?

P: Yes.

S: I think she has already crossed over, just now... P: I can

see her right now, yes.

S: You suddenly had a jerky twitch, as if someone had released another lever. *(P. laughs and spreads his legs apart.)* That was probably the moment she left. So there's one with further muscle tension, and after she left – you can tell me it was a coincidence – you sat down differently, much more relaxed, I think.

P: I noticed that. It was an impulse, yes.

S: In addition to the initial worried and uncertain one, there is now the one with the residual tension.

P: She's sitting... She's sitting on an armchair over there.

S: After we took it out, your voice sounds much more resonant. It has a much broader sound spectrum. And the one on the armchair, what does it actually look like?

P: Yes, she's not quite as worried. Well, a little more relaxed than the other one.

She still has that posture with her legs crossed, but her face is a little more relaxed. A little more content, but still tense, yes.

S: How can you tell she's still tense?

P *(crosses his legs briefly)*: *That* posture!

S: She's still a little hunched over in her posture... P: Exactly.

S: Can you sense that it's more comfortable when she's outside? Or should we bring her back in?

P *(laughs)*: No, no, it's okay if she's outside. It's more pleasant that way. Therapeutic greeting

(10.6), psychoeducation (10.4),

Say a nice greeting to your ear and your body. What we have done now is to bring your previous physiological reactions, such as rigidity and tension, from the physically felt and acted-out area into a visible area, with effects on your pulse, heart rate, heart rate variability, intensity of your heartbeat, etc. Two tense Mrs Ws are standing and sitting visibly before your inner eye. We have brought it into the visual realm, and there is something very beautiful about that: we don't need to repress it in order for it to cease to have a physiological effect, but we can simply acknowledge the two of them with the burden they carry.

Appreciation of suffering experienced:

It is different from repressing when we say to them: "You've had a really hard time. You just have to acknowledge that. I don't envy you. I respect what you are carrying, it's pretty tough." You can say that to them, and they'll probably be quite happy to hear it, won't they?

P: Yes.

Therapeutic greeting, transformation from acoustic to visual experience (10.8):

S: The interesting thing is: if we bring it from your body and, incidentally, also from your emotional state to the two over there, into a visible area – nice greeting to your brain – then you could also bring it from the audible to the visible area.

Feedback from the counsellor and therapist and the test subject on body perception:

S: And your right shoulder gave a kind of jolting reaction, like a resonance response: Yes! Is there anything that seems different in the acoustic realm?

P: No, I don't notice any difference.

Explanation of apparent stagnation as irrelevant to the process (trivialisation), psychoeducation (10.4, No. 6), therapeutic greeting:

S: That's perfectly fine. It's no wonder... I used to find it a bit difficult and tough to reduce tinnitus noises, and now I know: A tinnitus noise consists of several to many partial noises, which are usually associated with different times of origin, different triggers, different stress reactions or aspects of a situation, and if you want to reduce them all at the same time, it's often impossible because they tend to want to be addressed individually and separately.

You can say to your brain: Hello there, that's nonsense, somehow: everything at once. Sound engineer metaphor

(10.3, No. 4), part 1, positive reinforcement:

Your brain should choose any partial tone or partial noise, consciously or unconsciously or completely unconsciously, that it says: We can get rid of that right now. Like a sound engineer pulling down a lever, perhaps the one that your brain finds easiest, simplest, most beautiful or most important and relevant.

If your brain had a sound engineer with a mixing console, and he could say, "That's the most superfluous thing right now, it's actually long since been dealt with and doesn't need to be worried about anymore" – can you imagine the image of a sound engineer and see which lever he would pull down?

P: The right lever.

S: Great! The sound engineer will know why he chose the right lever. Maybe he thought it was the easiest, or the most important, or the one he liked best.

When a sound engineer pulls down the lever, it doesn't automatically make everything quiet all at once. He's only pulled down *one* lever. Can you already hear the effect of what *your* sound engineer has done?

P *(in a surprised voice)*: He reduced the humming on the right side, made it *quieter*. S: Great!

P: It's quieter now!

S: You can say to your sound engineer: "Great! Really nice! Would it be okay, dear sound engineer, if you pulled down not just one, but several levers, the ones that you, dear sound engineer of Mrs. W., feel are appropriate right now. From an autonomous, internal perspective, you could take a look – are there any others that you think are no longer needed right now? Feel free to pull down several or many, as your sound engineer decides in his autonomy. What does he do?"

P *(laughs heartily)*: "He's fiddling around on the left." S:

Does he pull one down there too?

P: He's pulling one down there too, yes.

S: It's not me talking, it's *your* sound engineer. Pay attention to whether you can perceive what the sound engineer is changing.

P: The humming is no longer continuous. It comes and goes, sometimes quieter, sometimes louder. Sometimes it's completely silent. And it's looser here too... *(strokes both sides of her jaw).*

S: Can we ask the sound engineer to turn down a few more on the left or right or left and right that are no longer needed? Let's see what he does...

P: He's turning the left one down even further. There are still a few in the middle here... S: If

we ask him to take care of the ones in the middle, what will he do?

P: Well, he has to do them one by one. They're big levers. He starts in the middle. He slowly pulls the middle one down. But it's not that easy. There's resistance, but he moves it too.

S: Would it help to put a tiny drop of oil on the lever? Would that be okay?

P: That could help. Yes, well, it has to jerk a little. But then it works... Then it works more smoothly again.

S: How many levers are there actually? P:

There are about six or seven levers.

S: It looks like he's pulled three of them down now.

P: He's pulled down three. Two are still on the right and one is still on the left.

S: Good. Should he tackle the left one or one of the right ones next? P: The left one. The

one that's still left on the left, exactly.

S: I noticed something happened to your shoulder. He'll pull it down once. If necessary, he should put a drop of oil on it.

P: Yes, it's easier than the middle one... S: How is

your left ear?

P: The buzzing has become quieter in my left ear... and it feels a bit clearer.

S: The free means that your hearing has almost certainly improved. It's a vicious circle: a type of hearing loss wants to drown out the tinnitus, but the tinnitus is also caused by hearing loss, and this can perpetuate itself. When we resolve the tinnitus, your hearing improves. As a result, for some people, the tinnitus does not subjectively improve to the same extent as it does measurably, and earlier a woman said to me, "Your voice has become louder." But she laughed because she knew I wasn't talking louder.

This means that her hearing has improved. It can happen that people hear remnants of the previous noise again, but tell your brain that you don't need it.

We could ask the sound engineer to pull down one of the two right switches. P: I'd like to do that right now,

exactly. That would be nice...

S: Will he take the left right or the right right? P: The left right.

S: If necessary, add a drop of oil, and then he'll pull it down.

P: Yes... but he's had more practice now, so it's working better. He's also become a bit braver *(laughs)*. You can hardly hear that humming noise anymore.

S: Great! I think the left one of the right levers is down now, and now we can take care of the right one of the right levers. There's still one hanging up there, right?

P: There's still one hanging up there, yes.

S: That makes me curious. We'll ask the sound engineer to pull that one down too. If necessary, we'll add a little oil.

P: It has a little more resistance, but it's fine, bit by bit.

S: Great! Did you add a little oil?

P: No, I forgot. I'll have to add some more.

S: Add a little more oil. I think that's what's holding it back. P *(nods with relief)*:

Okay!

S: There, now they're all down. P:

Now they're all down.

S: What happened to the previous humming noise? P (*in a*

surprised voice): It's gone for now...

Physicist anecdote to reduce scepticism (10.4, No. 7)[163] :

S: Say hello to your mind or soul. Once upon a time, a physicist travelled from Lüneburg to Bremen to visit some friends, who were farmers. They asked him, "Have the sheep been sheared in the Lüneburg Heath yet?" and the physicist replied, "Not on the side facing me." I find that incredibly careful. If he didn't check the back, how can he, as a physicist who evaluates his information statistically, presume to make a statement about what is on the back of the sheep that he hasn't even seen? I also find you very careful in telling me that it is quiet "at the moment". You haven't visited the future yet. So you are absolutely right: who could prove to you or me what the day after tomorrow will look like? Of course, it could just as well be even better the day after tomorrow, and your scientifically meticulous voice has forgotten that...

Sound engineer metaphor, part 2, deconstructing scepticism, reinforcing plausibility for therapy effectiveness (10.16):

S: ... so that your sound engineer has pulled the six levers into the minus range because he now knows how to do it. If I may put it bluntly: your sound engineer can't be so stupid that he deliberately pulls the switches back up tomorrow after he knows how to do it... Besides, he enjoyed it, and once he realised how to do it, it became easier and easier, not more difficult. Now, of course, your sound engineer could respond: "Yes, but there is the phenomenon of overmodulation. It could be that if a punk band plays on stage tomorrow instead of a chamber concert, the settings will no longer be correct." He's right when he says that. You can't mix a punk band the same way you mix a chamber concert. I would like to say to your sound engineer: "If a punk band is rocking out and vomiting on stage here tomorrow, I would ask you to adjust the settings without being asked, thanks to your inherent competence and professionalism, so that it suits their performance." You can't mix a punk concert the same way you mix a chamber concert. He knows that too.

S: Your words "At the moment it's gone" contain an objection, don't they? P:

Yes.

S: If the objection refers to what you mean by, "Who's to say it will still be okay if even more massive triggers come from outside, if people die or fall out in arguments?", I would like to say: Since we have seen that the symptom reacts to stress, it may of course be that things to which your body has traditionally reacted more strongly require an individual approach. It's okay if your sound engineer adjusts this pre-consciously, subconsciously, even in your sleep or under any conditions, so that the levers always end up in the zero or minus range. That's okay, isn't it?

---

[163]Hammel, 2022, p. 291f.

P: It's okay. Wonderful!

S: How are you feeling now?

P: Much better than before.

Horizon metaphor for reducing perfectionism[164]:

S: Behind every horizon comes the next horizon. Behind every horizon of 'good' comes a new horizon of even better 'good'. Some people therefore never speak of 'good', but at most of
"Better." But because it would never be "good," only "better," you might as well call the better option "good."

Sound engineer metaphor, part 4:

S: Ask the sound engineer to move the six switches from the zero range to the minus range. See if you like that better.

P: It feels like I'm sinking a little deeper into my chair. Earlier, I thought I was already at the limit. But now there's another option, because there's a minus range.

S: That means you now have even more buffer. Now much more extreme things would have to happen before anything else would come up. How are you feeling?

P: Relaxed, I feel warmer, I am more confident.

Two-box metaphor for reducing scepticism[165] , therapeutic greetings:

S: There are two boxes in your brain: the always box and the in-the-moment box. When something stupid happens, people say, "I always..." and "You always...". Then you're not so disappointed when it stays that way. When something good happens, people say, "Right now, it's good..." so that they're not disappointed when it doesn't stay that way. Ask your brain to lift up the entire contents of both boxes and swap them around. Tell your brain to give you a physiological-emotional feeling of "always" about this silence, a feeling of identity and home for what feels like 65 years or more. You wouldn't come to me and say, "I've always been so well, please help me keep it that way!" – Always is forever!"

P *(laughs with relief)*

Sound engineer metaphor, part 5:

S: One more question: First you talked about six or seven switches, then only about six... What about the seventh?

P: I wondered about that too. At the moment, I don't see one.

S: Perhaps the seventh switch is not a slide switch, but a push button. Is there a toggle or push switch anywhere?

P: Yes, there is one on the far right, it's an on/off switch. That's right. S: Is it set to "On"

or "Off"?

P: On 'On'.

S: Ask your sound engineer to turn it off as a test, and if you don't like it, you can turn it back on again.

---

[164] Hammel, 2022, p. 71.
[165] Ibid., p. 290f.

P: I prefer it to stay on.

S: Can we build a rotary switch where the on/off switch is? Then you could not only switch it on and off, but also dim the activity. We can see how far we can turn it to the left, less and less, and it could stay somewhere above zero – or below zero, as long as it's not zero.

P: At the moment, a little above zero, but close to zero is also important.

Wave metaphor for regulating empathic identification[166] , therapeutic regards:

S: It could be a switch for resonance experience, with which you can dim the amplitude for resonance, even if the wavelength is set so that you can still finely sense what is going on with your counterpart. You can vibrate in the same way as your counterpart, but with very little deviation... Give your system a warm greeting; for certain aspects, your system may also decouple from your counterpart. If your partner has aspects of tinnitus, you don't need to have that too through resonance, if something like that were to play a role. And if your counterpart has muscle tension, you don't need to get muscle tension through mirror neuron activity. You can say, "That stays with you." Or "I infect you with my relaxation and silence more than you can ever infect me." That's okay too, right?

P: Very much so.

Interim assessment, stabilisation of results and clarification of new goals [167]

S: Let's assume that our session is just beginning at this very moment. Everything is as it is now, and it feels like it has always been this way. If I were to ask you now what the best possible outcome for our session would be, what would your answer be?

P: Well, the silence is lovely... *(silence)* ... that reminds me of the sound engineer.

Sound engineer metaphor, part 6, therapeutic greetings, suggestion to block out bodily functions (10.1, no. 1), posthypnotic suggestion (10.18):

S: Send your brain a warm greeting, telling it to make sure that your sound engineer does his job even when you're not thinking about him, just as you don't need to remember to breathe in order to breathe, you don't need to remember your bowel function in order for your bowels to work, think about bile secretion when your bile is functioning, just as you don't need to think about your blink reflex or your swallow reflex so that they don't forget, or hormone production. Give your sound engineer my regards and tell him to do his job subconsciously and preconsciously so that you don't even need to remember him. If you want, you are free to remember him if you wish. Is that okay?

P: Yes, that's fine.

Sound engineer metaphor, part 7, therapeutic modelling/transformation technique (10.12, no. 3), preconscious anchor [168] :

S: Look at the sound engineer. We ask him, 'Is it okay with you that you are responsible for sounds, noises and silence when you are unconscious, preconscious, asleep, under anaesthesia and in every conceivable state?' What does he say?

---

[166] Ibid., p. 35.
[167] Ibid., pp. 78f.
[168] Ibid., p. 274f.

P: I'll do my best.

S: To me, he looks like someone who already has it down. Does he look like someone who, if he does his best, can do it?

P: If he wants to, he can do it.

S: Then let's ask him, "Do you want to?" What does he

say? P: He says he'll do it.

Conclusion:

S: Wonderful! I think we're done. I would like to thank your sound engineer and you very much.

P: Thank you very much too!

11.1.2 Feedback from the test subject on the listening experience (summary)

1. Initial situation: Very low humming on both sides
2. "I don't notice any difference."
3. "The humming on the right side [is] reduced, quieter... It has become quieter!"
4. "The humming has become quieter in my left ear... and it feels a bit freer."
5. "It's gone now..." – in response to the question of what happened to the humming noise
6. "Much better than before" – in response to the question of how her hearing is now.
7. "Well, the silence is lovely..."

11.1.3 Comments on the procedure

In the following, I would like to explain some aspects of the approach in more detail.

Clarification of objectives:

As with the classic systemic approach, clarifying goals is the first step in the process. This not only serves to inform the therapist about the client's wishes, but also to create a vision and set expectations that will help to ensure that what is envisaged is actually achieved[169]. Therefore, in hypnosystemic work, suggestions can also be woven into a target framework that the therapist considers desirable and expected. Following this impulse, a follow-up question is asked to check what the subject might want instead or in addition.

Anamnesis:

The higher the density of potentially effective interventions, the more far-reaching the results will be by the end of a session. The better the results of an initial session are from the subjects' point of view, the more positive their expectations of the next session are, which, based on experience, then leads to significantly better results in the follow-up session. For these reasons, anything that takes up time without generating immediate therapeutic results is avoided. For this reason, anything that is potentially time-consuming in terms of information processes

[169] Ibid., p. 175ff., Schmidt 2005, p. 102f.

not immediately necessary, postponed and potentially omitted[170]. In fact, the anamnesis – which in this case merely confirms the written preliminary information – serves more to connect the therapist to the subject's experiences and memories and to generate an age regression in the subject to the time when the symptoms first appeared.

Psychoeducation:

Knowledge about physiological and psychological relationships is provided to the subject on various topics, but fundamentally to initiate or stabilise goal-oriented processes by raising awareness of helpful changes and reinforcing them, and by initiating the expectation of more far-reaching helpful processes. In addition, the procedure serves to increase the perceived plausibility of the effectiveness of the treatment and to deconstruct the perceived plausibility of objections (scepticism) to the effectiveness of the therapy. In this way, goal-oriented constructions of reality are reinforced and constructions that hinder the therapeutic goal are weakened or dissolved.

Therapeutic modelling / subtraction technique:

A stressful (or presumably therapy-hindering) experience of the subject is personified as a version of her and presented in another place in the room. Then this person is described: What does she look like? How does she behave?

The therapist can ask the subject to describe how she perceives this person and also describe what he perceives himself: Any bodily behaviour that is reduced or disappears in the subject when the person in question is presented and described by her as being "outside" can be treated as if it now belongs to the imagined figure.

This naming of changes perceived by the therapist also serves to make them conscious and indisputable to the subject, thereby stabilising the positive change.

By treating the externalised figure as real, the disappearance of the relevant stress and its symptoms is also experienced as real. This experience of a symptom-reduced or symptom-free state is recognised by the therapist as real and lasting, and thus consolidated. Another way to stabilise the result is to generate reactance in the subject by "threatening" to bring back the externalised person if the subject claims that there is no difference from before.

In part 1 of the subtraction technique, a person is externalised whose characteristics the therapist deduces from the brief anamnesis interview. In part 2, it is a person whom the therapist deduces from the subject's involuntary body behaviour.

Therapeutic greetings, psychoeducation:

Therapeutic greetings are often used to initiate a desired experience and to protect against conscious objections. In this session, they are used more to present what has already been achieved as perceptible, relevant and indisputable, to protect it against objections and thus to stabilise it. To this end, the intention, the assumed mode of action and the observed result of the therapeutic interventions just offered are explained.

The effect that gradually visualising previously physically experienced stresses in the external environment gradually dissolves them is identified and explained in order to stabilise the result achieved.

---

[170] Hammel, 2022, p. 41.

Appreciation of experienced suffering:

The previously initiated age regression to the time when the symptoms first appeared (see medical history below) provides an opportunity to bring the stress expressed and generated by the tinnitus back to the time of its origin (or to the neural location of the memory), so to speak. The procedure follows the principle of "defocusing and refocusing", according to which automated symptomatic processes can be dissolved if they are reassociated with the initial experience and thus dissociated from the regularly reactivated experience[171]. A central factor in traumatic processes is the experience of social isolation, in which a person feels exposed to an existential threat. An important aspect here is the lack of emotional resonance from helpful other people. By travelling with the subject into the "now" as experienced in the present
and gives her precisely this resonance[172], he enables the healing of that stress which, because it was experienced in emotional isolation, was shifted from the psychological to the physiological or acoustic experience (at that time presumably as a lesser evil, because it enabled a reduction of the overwhelming emotional stress).

Therapeutic greeting, transformation from acoustic to visual experience:

The test subject is made aware that the reduction in symptoms experienced so far is based on the fact that a previously felt stress is now experienced as visible rather than physically or emotionally perceptible. On this basis, it is made plausible that the transformation of an acoustic stress experience into a visible experience is also possible.

Feedback from the pastoral caregiver and therapist or the test subject on body perception:

Similar to therapeutic greetings (and sometimes in combination with them), the therapist communicates which physiological processes he observes that indicate stress reduction and possibly the onset of a changed hearing experience. If the observations are presented in an appreciative manner and are consistent with the test subject's experience, they are likely to lead to a stabilisation of the results achieved, an attitude of acceptance and positive expectations for the next, more advanced steps.

The request for feedback on the experience serves only partially to inform the counsellor/therapist. The intention of this intervention is largely to make the subject aware of goal-oriented changes in such a way that they are protected against later objections on her part. This is more successful if the counsellor/therapist and the subject compile a whole network of observed changes.

In the area of changes in the listener's experience, the pastoral caregiver/therapist is naturally more dependent on feedback from the subject.

Explanation of apparent stagnation as irrelevant to the process (trivialisation), psychoeducation (10.4, No. 6), therapeutic greeting:

Many people find it difficult to notice and name differences in what they hear. With the idea that the noise should be "switched off", subjects often only pay attention to whether something is still "there" instead of providing feedback on partial improvements. Information on this can only be obtained through targeted, active questioning by the pastoral caregiver or therapist.

In addition, the hearing threshold normally decreases along with the volume of the tinnitus, which is why sounds that have become quieter in absolute terms are perceived by test subjects as being comparatively less quiet and are only reported after a delay.

---

[171] Ibid, p. 41f.
[172] Ibid., p. 42f., Peyton 2019, p. 141ff.
(173) Erickson speaks of establishing a Yes-Set, cf. Erickson & Rossi 2001, p. 54. Grinder and Bandler describe the same thing as a process of "pacing and leading", cf. Grinder & Bandler 1981, p. 54ff.

This is often compounded by the fact that depressed subjects (presumably due to traumatic dissociation, i.e., for the purpose of numbing overwhelming emotional stress) have reduced perception and discrimination abilities and thus reduced decision-making and control not only over emotions but over all bodily processes, including acoustic processes.

Tending to be thorough and meticulous (often described as "perfectionist" or "compulsive"), female test subjects usually only report whether the noise is "still there" or "gone" and rarely or never say that something is "already better" or even "good".

Overall, it can be observed that many people consistently offer the worst possible interpretation of their experience when describing possible or actual improvements, apparently (according to regular feedback on follow-up questions) in order to prevent possible disappointment.

Here, it is important to avoid "negative reinforcement" and to create confidence for the further process.

For these reasons, the counsellor and therapist is demonstratively cheerful and undaunted when the test subject's initial feedback on changes in her listening experience is negative.

However, the negative feedback from the test subject also prompts a change in approach and suggestions aimed at altering the way the brain processes sound[174]. The change in strategy follows the systemic principle of "If something doesn't work, try something else...".

Positive reinforcement:

The counsellor and therapist shows interest and enthusiasm for the observed changes ("Great... fantastic... very nice... now I'm curious..."), connotes them positively and emphasises their relevance to the work in order to stabilise and reinforce what has been achieved.

Sound engineer metaphor:

When using the metaphor of the sound engineer and his mixing console, the test person reports an improvement in her hearing experience for the first time. This is where the continuation of the aforementioned principle comes into play: "...if something works, do more of the same." The sound engineer metaphor now becomes the framework for the entire further process.

It is suggested that the sound engineer decides autonomously – i.e., independently of the opinion of the pastoral caregiver and therapist as well as the conscious opinion of the test subject – which lever to pull in order to reduce one of several partial sounds of the tinnitus, and that he chooses a lever that seems particularly suitable to him because pulling it promises the most success. The independence of the unconscious decision from the conscious thinking of the test subject is expressed on the part of the pastoral caregiver and therapist (similar to the therapeutic greetings) by the fact that it is not the test subject ("you") but an entity in the third person ("your sound engineer") who is asked to move a lever of her (or his) choice. The test subject herself illustrates the independence of the unconscious decision from her conscious thinking, among other things, by the astonishment in her voice when she notices that the humming has now become quieter and by her laughter when she says, "He's fiddling with the left one."

The indication that "not everything automatically becomes quiet at once" when the sound engineer flips a switch relativises the idea of sceptical instances that the procedure could be completely ineffective. While superficially (for conscious thinking) these instances are agreed with, thus rendering their objection to the assumption of an improvement superfluous, implicitly (for unconscious experience) the thesis is reinforced that noise reduction takes place in small stages

---

[174] See section 8.1.

Since the sceptical authorities are satisfied (and also distracted), there is no resistance to this statement, and what remains unchallenged can take effect.

The "drop of oil" from the sound engineer's bottle serves to make the overcoming of an initial obstacle to implementation (narratively) plausible. There is no contradiction because the image is coherent in itself, and because there is no contradiction, there is no obstacle to implementation within the test subject.

The sound engineer is advised to move the levers into the negative range, which means that additional stress beyond the previous tinnitus-generating stress level would be required before tinnitus would return. He is also instructed to move the levers "pre-consciously, subconsciously, even in sleep or under any conditions... always end up in the zero or minus range, i.e. to adjust their setting to the overall systemic situation through autonomous self-regulation. This takes into account the understanding of hearing as a dynamic balance that must be involuntarily balanced at every moment. In contrast, tinnitus is understood as a symptom of a stagnation of this balance, in which the autonomous self-regulation of hearing has been lost.

It is interesting to note that the test subject initially refers to "six or seven" levers, but subsequently only mentions six. While searching for the seventh switch, an on/off switch is found which is switched on and which the test subject does not wish to switch off. The suggestion to switch it off using a dimmer switch and set it to a position close to zero is welcomed. It is suggested that the regulation of tinnitus occurs as unconsciously as is usually the case with the regulation of breathing, bowel activity, bile secretion, hormone production, swallowing and eyelid closure reflexes. In this context, it is suggested that the sound engineer should perform his work so autonomously and involuntarily that the test subject can forget about him. Forgetting the sound engineer and shifting noise regulation into the unconscious sphere serves to forget residual noise.

Physicist anecdote to reduce scepticism:

After the test subject expresses scepticism as to whether the good treatment results will be permanent, a physicist is mentioned who, when asked whether the sheep in the Lüneburg Heath had already been sheared, replied: "Not on the side facing me." Since the physicist's behaviour is equated with that of the test subject, her doubts about whether her improvement will be permanent seem just as absurd as the physicist's idea that sheep that have not been sheared on the front could be sheared on the back. The sceptical authorities are praised for being "careful" and asked to consider, based on this care, that the improvement that has occurred could continue to flourish in the future rather than diminish. This turns the idea of previous scepticism into an argument for confidence.

Horizon metaphor for reducing perfectionism:

The subject's statement that she is "significantly better than before" contains not only recognition of the improvement that has occurred, but perhaps also a limitation of that recognition, in that she only speaks of being "significantly better than before" and not "good".

The counsellor and therapist now presents the treatment as a journey across several horizons, each horizon representing a state that is "better than before". Just as one can cross any number of horizons without ever reaching the last one, one can consider one's situation to be "better than before" for as long as one likes without ever describing it as "good".

The counsellor and therapist therefore suggests defining every "better" as "good", knowing that behind it there will be a "horizon of even better 'good'".

---

[175]Hammel, 2014, p. 82, Hammel, 2022, p. 105.

Two-box metaphor for reducing scepticism:

The test subject states that "at the moment" things are good, thus implicitly expressing doubt about the durability of the result. She is told that people associate pleasant things with "at the moment" and unpleasant things with "always" in order to protect themselves from possible disappointment if the good things do not last or if the bad things remain. Since this is an unfavourable strategy in view of possible self-fulfilling prophecies, her brain should swap the contents of its always box and its at the moment box. Her brain should give the good things a feeling of always having been there and decide: "Always has been forever."

Wave metaphor for regulating empathic identification, therapeutic greeting:

The subject's partner is also a tinnitus subject in the study and is currently waiting outside for his treatment. Based on his encounter with both of them, the counsellor and therapist has the idea that the subjects are in strong resonance with each other's experiences and that this could contribute to the maintenance of the symptoms. It is suggested that they continue to be empathetically in tune with each other and with other people, but with a view to experiencing problems with reduced amplitude.

Interim assessment, stabilisation of results and clarification of new goals:

With the imagination that what has been achieved "has always been felt" and that treatment is only just beginning, the test subject is asked to name a goal that she now considers to be the "best possible outcome".

This approach has several aspects: on the one hand, it evaluates which of the initial goals are no longer being pursued because they have apparently already been achieved; on the other hand, it identifies what is still missing, what has emerged as the problem behind the problem, or what has come to the fore as a new goal. However, something else is much more important: by implicitly assuming that the good result is to be taken for granted "as always" and no longer requires treatment, the achievement is safeguarded against any objections that could otherwise destabilise it and is consolidated as part of the experience of identity.

Suggestion for blocking out bodily functions:

The subject's unconscious is told to block out the noises in the ears in a similar way to the swallowing or blinking reflex, bowel function or hormone production.

Preconscious anchor:

Repeated positive reinforcement. The subject's unconscious (in the form of the sound engineer) is once again distinguished from the conscious and specifically recognised as a competent authority. This emphasises its autonomy and ability to act, to regulate hearing involuntarily, autonomously, flexibly, regardless of the perceived helplessness and apart from the conscious efforts of the subject.

11.2 Mr E.

Mr E. is 51 years old. For the past 10 years, he has been hearing a constant high-frequency buzzing sound at 12 kHz in his left ear, which becomes louder in noisy environments. For the past 6 years, he has also been hearing a low humming sound with irregular short interruptions. The buzzing started after he had middle ear inflammation, and he thinks the humming started at the same time as he was feeling tense in his neck and throat. He reckons stress is the cause. Noise around him makes the buzzing worse. Loud noises and lots of noise around him in general bother him. He finds large group conversations, such as at business dinners, "extremely difficult" (hyperacusis). He believes that "a slight depressive mood was and is part of the symptoms"; Mr E. has been in therapy for four years. Regarding how he deals with the noises in his ears

Mr E. says: "I quickly decided to ignore the buzzing; I only hear it when I think about it and talk about it, etc. So I don't suffer much, but I would like to get rid of it. The humming can be irritating when there is a lot of ambient noise because it continues to hum with a delay until it calms down again. Since the humming is intermittent (1-4 seconds on, 1-10 seconds off), its irregularity draws attention to it, but it's not bad." Mr E. works as a physicist and has been an active hobby musician for 15 years. After his daughter was diagnosed as gifted, he is considering having himself tested as well.

11.2.1 Treatment process

Clarification of goals:

S. Assuming we achieve the optimal, best possible outcome here, what would that be?

P: A few annoying things would disappear, mainly in terms of hearing comprehension. I no longer suffer in quiet environments. In noisy environments, such as large groups or conferences with a lot of background noise, I have to concentrate hard to filter out the noise because my tinnitus gets louder and distracts me. It's exhausting and also unpleasant when I have to ask someone what they said for the third time. It's embarrassing and also incredibly tiring. I would be much more relaxed in such situations and would go into and come out of them with less stress.

S: Would it also be a goal if your auditory system picked up on this and said, "I'm not going to make the noise in my ears any louder just because the other noises are louder?" It seems to me like a teacher who raises their voice because the class is getting louder, and then the class gets louder because the teacher has raised their voice. But there are also teachers who learn to become quieter when the class is louder, so that the class becomes quieter because they have become quieter.
Suppose your inner self had already noticed this, could it take this as an opportunity to become quieter rather than louder when the external noises become louder? I imagine that if your system deals with the previous noisy situations in a relaxed and calm manner, the noise will also become quieter.

P: *(nods)*

Feedback from the counsellor/therapist and the test subject on body awareness:

S: I notice that while I am offering and suggesting this to you, your breathing has become much deeper, freer and calmer. To me, this means that your muscles have taken up the idea, so to speak, and while I am speaking, they have loosened up and become relaxed and calm. Does that make sense?

P: Totally. Therapeutic

greeting:

S: If your inner self has already taken up the idea of being relaxed and calm, then send your brain a nice greeting. Either it can decouple the tinnitus from the stressful experience anyway, or if it prefers to keep them coupled, it can downregulate the ear noise with increasing relaxation and calmness.

Explanation of apparent stagnation as irrelevant to the process (trivialisation), placebo anecdote: S: Has it done

that yet?

P: More like the opposite.

S: Now it has turned up the volume? That's like the "don't think about blue" paradox: "Don't think about the noise in your ears!" Or like when practitioners in a clinic make the pain even worse

reinforce this when they ask: "Are you in pain? Would you like to use this red pain slider to show how severe it is?"

I have often seen that we get the slider down to zero during the session. Sometimes I have seen that the symptoms appear to remain the same or only decrease slightly, and when Peter Schneider measured again, they said, "Now it's gone."

It reminds me of a friend who woke up with a headache and realised she didn't have any painkillers in the house that usually help her. She then imagined dissolving an aspirin in a glass of water and drinking the glass. Then she fell asleep again and later woke up and got up. It was only in the evening that she noticed that the headache, which had usually plagued her all day, had disappeared from the moment she fell asleep and woke up again. It didn't disappear while she was imagining taking the tablet, but when she was distracted, so to speak, by falling asleep. Sometimes it takes one or more moments of distraction, when the unconscious is undisturbed. However, it is often possible to achieve this during the session.

Anamnesis, opening up options, psychoeducation (10.4, No. 2): S: Where do you have

the tinnitus, on the left or right?

On both sides.

Which is more noticeable to you, the noise on the left or on the

right? P: It's relatively the same, with a slight tick to the left. S:

Shall we start on the left or the right?

P: Left.

S: How long has this noise been going on?

P: There has been a very high-pitched whirring noise for about 12 years. That's just one sound. There are three phenomena. There is a humming noise that comes and goes only on the left side, sometimes louder, sometimes quieter. At the moment, it's barely noticeable. I hear it mainly when it's very quiet. Then it can be very annoying. And then every few weeks or months there's a very deep humming noise that makes you think it must be coming from outside, it can't be coming from inside. Underneath this high-pitched whirring noise is a cotton wool ball of not being able to hear.

S: Yes, I understand. The tinnitus noises are always at the edge of a zone with an elevated hearing threshold, you could also say hearing loss.

Transformation from acoustic to visual experience (representational, 10.8, No. 2), Part 1, Provoking reactance:

S: Let's start with the humming on the left, or what's left of it, which is barely there now. If you listen carefully, you can hear it, I've heard.

P: Yes.

S: If you imagine it were visible, an object or animal, what would it be? P: A big, fat moth.

S: Moths are triangular. Where is it looking? P: To the left,

in front.

S: Would you prefer it if it were looking into your ear or outside?

P: Outwards.

S: I thought so. Could you give her an even better position, or is it already optimal? P: No, that's fine.

S: The direction is fine... Would you prefer it closer to your ear or even inside – or further out?

P: (*laughs long, hard and yet somewhat painfully)* Further out.

S: That was a wild threat... Who likes moths in their ear? P: *(laughs again)*

Transformation from acoustic to visual experience (concrete), part 2, creating positive expectations, opening up choices:

S: The moth is an image created by your inner director. Let's let the moth fly a little further away. Would you prefer it further away from your ear or back in the same place as before?

P: No, further away.

S: How far should it fly away? Any distance? Or would you prefer it to be two metres away rather than five?

P: No, actually, it can go further and just fly into the forest or something... Paradoxical intervention

(10.17, No. 3):

S: It doesn't do that all at once. Then take a look at how it gradually... and you can decide whether your moth is as purposeful as a jet fighter or whether it flies in a zigzag pattern like a real moth...

P: No, it's relatively natural.

S: Then look at what it looks like when it keeps flying towards the forest. You can see it, right?

P: Yes.

S: Is that more pleasant?

P: Definitely.

S: The forest is about five hundred metres away from here. How far has she gone? P: Oh... just a

few metres *(laughs).*

S: Then she still has a way to go...

Psychoeducation, reducing or reinforcing plausibility:

S: I started with the humming because your inner self has already regulated a lot. The assumption is that this is probably the sound that is quickest, easiest and simplest to regulate, so we'll start there and continue from there.

Transformation from acoustic to visual experience (concrete), part 3, therapeutic greeting:

S: If we ask the moth to fly away until it is out of earshot – we can close a few doors in between, if you like – then I can tell from your breathing that it has done so or is doing so. What is changing?

P: Hm... There's actually a strange gap right now.

Stabilisation of positive results, normalisation of the new, problem-free anecdote: S: Yes, exactly.

The gap could be considered remarkable.

P: Yes.

S: I once had a young person in therapy who had been struggling with suicidal tendencies for a long time. At the end, he said, "Right now, my only problem is that I don't know who I am without that problem." I asked him, "Should I work on that with you, or can you do it on your own?" He said, "Well, I can do it on my own."

P: Okay, there's this gap. There's something unfamiliar about it.

S: Yes.

P: Yes, all right. That's unfamiliar.

Transformation from acoustic to visual experience (concrete), part 4: S: Let's just

continue with the buzzing.

What would the buzzing look like?

P: Like someone constantly scraping a plate.

S: Visually represented, if we could turn it into a shape, figure or something like that? P: Then it

would be a crystal glass.

S: Is it a glass with a stem, or more like a crystal juice glass?

P: It's rather compact, like a thick bowl or even a solid glass thing with points and angular shapes.

S: Just look at them. Do those points and corners point towards the ear or away from it? P: Towards the top.

S: And do you like that direction best, or would you rather turn the glass? P: I tend to turn it.

S: Turn it in the direction you like best! P: Yes.

Feedback from the counsellor, therapist and test subjects on body awareness:

S: I notice a change in your breathing and in your eye movements, which I associate with calmness. What is changing within you?

P: Um... I'm finding it a bit difficult to think somehow. S: Don't worry

about it!

Transformation from acoustic to visual experience (concrete), part 5, therapeutic greeting:

S: Should we move the crystal glass thing closer to you or further away? In which direction should we move it, or should it stay where it is?

P: Um... I don't know if I can move it or if *I* have to move myself. S: That's a good question!

P: It looks relatively stationary, so to speak...

S: All right. We'll leave it right there. You can see where it is, yes? P: Yes.

S: Great! Look at it! And tell it: "You want to stay there! You can stay there! You don't need to move at all! I'll take care of myself!" Now please sit down on this chair! And let yourself be surprised! It's *very* different from here! First of all, you see the thing from a different distance and perspective! *(Mr E. changes seats.)* The thing has stayed where it was, and you now see it from a different distance and perspective.

P: Yes.

S: Which place do you like better, the current one or the previous one?

P: The current one... Overall, the current one.

Offering choices:

S: And if I let you choose, would you rather sit somewhere else, or stand next to the door, or there, or is it fine as it is, or a seat next to it?

P: I think I'd rather look out of the window. Or away, so generally not look at that *(points to the place with the "crystal glass thing")*.

S: All right. We could leave that there and go next door to the waiting room. Would that be more comfortable for you? *We* had agreed: *this* is stationary. *You* have to move. Then *I* say:
"What do you mean 'have to'? We can do that!" Shall we go next door? Transformation from

acoustic to visual experience (concrete), part 6:

S: Or we could make a film of you moving backwards, so it looks as if the entire room, including the object, is moving backwards – like a drone film where the drone goes up, or maybe it's a zoom. We zoom the entire room, including the object, backwards...

P: Much better!

S: ...by imagining you're on a swivel chair and moving backwards.

P: Yes. That's better, because then I have both. I don't feel like moving my body at all right now, I feel really heavy, and just walking over from there was...

S: …was a challenge! We'll put castors on your chair and the "thing" will go away! Now that we've got the moth to move away, what's different acoustically now that you've moved away from the glass thing, what did the buzzing mean?

P: It's much less on the right now, but not on the left.

S: Very good! We now know that the right and left are two different systems. That means the glass thing caused the noise on the right and not on the left.

P: Apparently, yes.

S: As far as I'm concerned, the glass thing can disappear like a genie in a bottle. If we miss it, we can always call it back. That's how it is with genies in bottles.

P: That's fine.

Transformation from acoustic to visual experience (concrete), part 7, opening up choices:

S: Shall we now deal with the rest on the right or the rest on the left? P: On the left.

S: All right. If the rest on the left had a visible form, shape and colour, what would it look like? P: Red.

S: And what is it?

P: Something made of fabric, I can't see it clearly, it's relatively large. S: Like a

curtain...

P: Something like that, but it's not flat, it's more like a lump. I'm standing very close to it. S: Can you

move the large lump of fabric away from you?

P: You can move it away, yes.

S: Shall we just move it vertically away from you? How far away would you like it to be? P: Somehow, I

feel a kind of affection for it. I don't want to get rid of it.

S: So the symptom is linked or interwoven with a value. P: Yes, exactly. It's

strange...

S: We could divide this fabric thing into two objects. One symbolises the value, the other the disadvantage that has been accepted for it so far, i.e. the symptom. It's like dividing grief into values such as love, loyalty and reliability on the one hand, and symptoms such as heartache and insomnia on the other. We want to keep the values, but the symptoms such as anger, rage, shame, etc. are energy-sapping and useless. Let's turn the piece of fabric into two objects, one representing something valuable and the other something that has been accepted until now because it has not been distinguished, literally the noise, but there will also be another, biographical level to it. If you were to make two objects out of it, what would they look like, what would the valuable one look like and what would the symptomatic one look like?

P: On the right, it's really gone, well, almost gone *(laughs in surprise)*.

So one is a cushion made of the same fabric. A large, comfortable, soft cushion. And I don't know about the other one, I can't see anything. I can't see anything at all. Where the other one should be, there is nothing. Nothing appears.

Therapeutic modelling / subtraction method, part 1 (10.12, no. 1), and transformation method (10.12, no. 3), transformation from acoustic to visual experience (concrete), part 8:

S: Let's imagine that where there is nothing, there is a person, and say to them: "We believe you deserve respect, appreciation, welcome, acceptance, affection, encouragement. Why don't you make yourself visible?" What does he or she do then?

P: There is a presence there. Needs affection. That's how I feel. S: If we imagine it's

someone who didn't want to show themselves...

P: That's exactly right, yes.

S: …then we say to him: "Hey, it's October 2024. Are you still alive?" What does he say? P: Yes.

S: That's an original answer, isn't it? P *(laughs)*: That's

true!

S: Let's ask him another question: Are you Mr E.?

P: Yes and no.

S: Let's imagine we split him in two. As if someone had placed two transparencies on an overhead projector at the same time, one is Mr E. ("Yes"), which we move a little closer, and one is not Mr E. ("No"), which we move a little further away.

Can you see one of them clearly now, both of them, or neither? One,

myself.

S: And what has changed in the other one?

P: It's like another object, relatively impersonal.

S: We ask him, "Are you a person or a thing? Are you a thing?" What does he say? P: "Yes."

S: "And if you had a colour and people could see it, what would it be?" P: "Black."

S: "What kind of thing are you, if one could see you?" P: "Fear." That's

not a thing, but...

S: Well, but it's a helpful answer. There is something black that represents fear. P: By the way, I'm

small, so I'm young.

S: How old?

P: Six, seven.

S: So, there's an E. back there, he's six or seven, and there's...

P: ... the fear ... it all kind of belongs together ... and then there's the cushion.

S: Should the red cushion stay there, or should we give it to the six- or seven-year-old, or would you like to have it right next to you?

P: I think I want it. S: We'll give you

the red cushion...

P: It's a bit of a shame, because I'd like the little one to have it too...

S: I have an idea: let's clone the cushion. The little one gets one copy and you get the other. Is that alright?

P: Great solution!

S: What will change for six- or seven-year-old Matthias when he gets the red cushion from you?

P: It's reassuring, and the black thing becomes smaller, less significant.

S: When you let the warmest, most loving Mr E. that you can be come out of you and he goes to the six- or seven-year-old, is it okay if he hugs him or puts him on his lap? What does he do with him?

P: He kneels down in front of him.

S: The six- or seven-year-old probably doesn't need the fear anymore. What changes with the black when the big one crouches down next to the little one?

P: The older child shields the younger one. It just becomes a little insignificant. S: Can we

shrink the blackness to zero, or is that exaggerated? P: I would say it diffuses away. It

dissolves... it's no longer tangible.

S: Like when the sun shines on the morning mist: no one would claim that the water no longer exists, but it just dissolves.

P: Exactly.

Psychoeducation (10.4, No. 6), Matryoshka metaphor:

S: What actually happened to the thing on the left?

P: It's significantly less, but still there. But the one on the right is really... gone!

S: Great! You say that on the left it is significantly less and still there. The experience is that these are composite noises. We deal with different frequencies, and then there is a residue, but strictly speaking, it is not what you focused on before, but something that was hidden behind it – like a smaller doll hidden inside a larger one in a matryoshka doll and concealed by it – and strictly speaking, it is other frequencies that make up the residue. Does that make sense?

P: Yes.

Transformation from acoustic to visual experience (as landscape, 10.8, No. 6), Part 1:

S: If we now take care of the rest, and we would visualise the rest on the left again, what would the current rest look like?

P: No image appears. It's almost like... a mirage in the distance.

S: If the weather conditions change now – even in the desert there is weather – so that this mirage disappears, can you imagine that?

P: Yes.

S: You can also see what that looks like. What has become of the ear phenomenon now?

P: It's... it fluctuates between... it's not really on and off, but it feels a bit like that, it's just at the tipping point...

S: It seems to me as if one is speaking to someone on the mobile phone who is near a dead spot, but one can still understand half of what they are saying.

P: But it's a bit surreal, actually.

Transformation from acoustic to visual experience (as landscape), part 2:

S: Something full of holes, somehow. Now we can take care of the rest. If it were visible, what would it look like?

P: The rest?

S: Yes.

P: What do you mean, the rest?

S: If there were still some remnants of acoustic phenomena... P: Oh, I see... okay...

S: Or like a landscape...

P: That's strange again. It's like a rock.

S: Let's imagine, if that's okay with you, that a sculptor comes along who has an idea for how to turn it into something else. Would that be alright? Or what if a company came along to dismantle it and use it?

P: I wouldn't want to do that. There's something sacred about the block, the block that sticks out. To destroy it...

S: No, that's not right. We won't do that.

Transformation from acoustic to physical experience (spatial shift, 10.9, No. 1), Part 1:

S: We'll do something else with the rest. If we imagine moving the rest into your left big toe, what changes in your toe? Feel it! It feels different, relatively certain.

P: So it's definitely there now. Because it wasn't there just a moment ago, but now it is... S: It feels more

present. How else can you describe it?

P: Exactly, just more present. A greater presence and a high sensitivity on the surface of the skin that can feel it. Perhaps one could say that the inner image of the toe is larger.

S: The remarkable thing is: something has changed in your toe. In your ear, too. What is different in terms of acoustics?

P: A downward pull, that's how I would describe it.

Transformation from acoustic to visual experience (as ritual, 10.8, No. 1):

S: A downward pull. Would you allow me to pull it down even further?
(mimes pulling movements).

P: Gladly.

S *(continuing the movements):* Now I'll pull downwards, and you can help from the inside. What colour is the thing we're pulling down?

P: Like a thread, in red.

S: If we pull the red thread longer and longer, further and further down, how does it change?

P: It's getting a little thinner.

S: Is the thread becoming thinner, paler, more

transparent...? P: Thin and frayed.

S: This fraying probably means that partial frequencies are falling out, i.e. that the thread is a composite one and partial threads are ending. If we keep pulling it and it frays, does it get thinner and thinner, or what happens?

P: It's approaching the end of the thread.

S: At some point it will be out. Is it already finished or are we pulling something else out? P:

No, it's finished now.

S: Good. What happened to your ear?

P: It's significantly lower and now has a real flutter in it... S: ... where it

disappears in between...

P: Where it disappears, yes, or one or more frequencies drop out.

S: Wonderful! If we were to see the occasional remnant still flickering, like something that sometimes still flickers, what would that look like?

P: *(silence)*

S: Maybe it flares up less and less while you're looking at it... P: Exactly.

Transformation from acoustic to physical experience (spatial shift), part 2, psychoeducation:

S: That was *the* big toe. Can we do the rest in the other big toe? P: No, I don't want it on the right.

S: Shall we try the second toe on your left foot? P: Yes,

good.

S: What do you feel changing in your toe?

P: Strangely enough, it's becoming more numb. I feel it less now.

S: What we sent in is perhaps a combination of perception and numbness, on an acoustic level noise and deafness, and on a kinesthetic level between discomfort and numbness. If that were the case, it could be that you are perceiving more finely. Something numb has arrived in your foot, so something numb has gone away in your ear, presumably.

P: The sound has just shifted significantly to the back of my head. The residual sound has somehow faded into the background.

S: For me, that means that the body has taken the next larger magnifying glass. One sound has disappeared and the next one behind it is focused on.

P: It's also higher.

S: The one at the back of the head is different, it didn't stand out because it was quieter than what was focused on before, which has now disappeared.

Transformation from acoustic to physical experience (spatial shift), part 3, psychoeducation:

When we shift this higher sound to the third toe, what changes in the toe?

P: It's now a kind of tingling sensation, only at the tip of my toe, right at the front of the ball of my foot. I've never felt my toe so precisely before, in terms of differentiation.

S: And now the back of your head has changed, how? P: It has

become quieter again.

S: Perhaps the frequency is different too?

P: Yes, it has become even higher. Although it is difficult to distinguish between quieter and higher.

S: It's the same thing. A masking frequency at the front has been removed and the next quietest frequency is now perceptible. This means that your hearing threshold has dropped so that you can now hear even quieter frequencies. You can now hear more finely and accurately. In doing so, you have found an even quieter frequency behind it that was also there.

Transformation from acoustic to physical experience (spatial shift), part 4:

S: Can we send it to the fourth toe? And now, of course, let's see what changes in the toe.

P: It's similar to the last toe, a slight tingling sensation at the tip of the toe. S: Does it have the same tremor

frequency?

P: No, significantly less.

S: It has a lower frequency...

P: I don't know, but it's less intense, in any case.

S: Now something has changed again at the back of your head, namely what?

P: Now it has reached the back of my neck.

S: Now it's gone from the back of your head. What's there at the nape of your neck?

P: Now it's almost in the middle. It's strange, when I concentrate on the right, there's nothing on the right, but it's still in the middle when viewed from the left.

Transformation from acoustic to physical experience (spatial shift), part 5:

S: Now, if we move that to your left little toe, see if you can notice how the toe changes.

P: Interestingly, not much is happening there now.

S: Then we are now close to "There is nothing there anymore". In terms of your body awareness, we have reached a lower threshold of perception, or your body is reporting back: I don't consider this relevant, it can be ignored. If you could imagine there was something there, what would it most likely be?

P: More like my big toe, all swollen up.

S: Regardless, the back of my head has changed. Pay attention to it and tell me what...

P: Now what's left is what I meant earlier by unreal. It's no longer clear: is it even a sound, is it even a noise?

S: Tell your inner self to try and consider it as mere imagination. P: I've been doing that a little bit

all along...

S: If you just think of it as the memory of a previous sound... imagine it's just a memory. It works, doesn't it?

P: Yes, but something resists, almost a fear of loss. Therapeutic modelling /

subtraction method, part 2:

S: If we imagine that we can place a guardian of values to your right, who says, "I still have a kind of small veto here." We say to him, "Please pay attention to the values!" He should place what is worth preserving on the right, and we could distinguish a hint of residual symptoms from him. We don't need the extremely subtle, almost imaginary symptoms. But the guardian of values is worth preserving. How is the auditory system actually doing?

P: That memory is still there.

S: I would like to continue working with you on another level. Let's say there is a Mr E. who has a crackle in his voice – a few frequencies are missing – and behind the crackle I perceive emotional states, and we put him over there. If we were to divide him into different people with different emotional states: perhaps there is one who was intimidated, repressed, impaired, frightened a long time ago, one who is perhaps sad, one who perhaps felt helpless, at the mercy of others, powerless, one who is actually angry, angry, someone who controls themselves so as not to show emotions that could harm them because they will be punished for it... can you imagine a few of this kind?

P: Definitely.

S: How many shall we make it? How big shall we make the group? P: Quite

large, five... maybe twenty to thirty.

S: Let's say twenty main ones in the front row plus ten more. I think there will be a few more... I see your left foot moving when they leave... And you made a gesture with your hand, like wiping away snot when crying or like shame... They can all gather over there. They have something to do with the past, either childhood or family history. You can probably imagine some of what's going on with them, right?

P: Sure.

S: You know the story. They are there.

Feedback from the counsellor/therapist on body awareness:

S: I don't know if you've noticed, but I can hear it clearly. After we took them out, your voice is much more resonant. The frequencies are much fuller. When you say "clear," it comes across much clearer than before. That's good, yes!

Speaking of which, now that your voice is so clear, how is the acoustic system doing?

P: It's exactly the same as before, I would say, but it's actually a little bit... nothing on the right, and on the left at the back of my neck, but now a little deeper, actually almost near my throat, the same sound actually.

Therapeutic modelling / subtraction method, part 3:

S: I think we should send a few more there. If we send a few other emotionally distressed people who have not been considered as relevant so far to the third row, that's okay, right?

P: Yes, yes. I wanted to limit myself a little bit before... S: ... to the most

important things...

P: Yes...

S: That's fine. But the interesting thing is – and this is no coincidence: as we fill the third row, you let out a deep chuckle, as if you feel relieved. That's not because we find their situation so funny, but because the system involuntarily feels relief when they become visible instead of tangible – and visible instead of audible, for that matter. And actually, we could add some who sound a bit nasal, as if they have a few tears that won't come out. Is that okay?

P: Yes.

Therapeutic modelling/subtraction method, part 4, and transformation method, example story, therapeutic greeting:

S: Could we also send some people over there who don't dare to breathe loudly or speak loudly?

P: Yes, especially *the* one who would like to scream, yes, like that...

S: If we put the one who would like to scream over there... and somewhere in the Bible it says that the angel appeared to Joseph in a dream. They had fled to Egypt from the child murderers, then Herod died, and then the angel said to Joseph: "Return home, for those who sought the child's life are no more..." [176]

P: Hm!

S: If we say to him there: If it still matters, you can cry now! No one will hurt you. No one can and no one will. And if anyone dares, we will stand by you, we will guard you. You can cry if you want to. How will he react?

P: Sceptically.

S: We tell him: You don't have to, but you can if you want to. And you also have permission to be sceptical. – I mean, I can sense that something has changed in your gastrointestinal tract while we were talking to him. I can hear it in a tiny little gurgling sound. The abdominal muscles have relaxed, probably in him and definitely in you...

P: It's definitely a relief on this side. Well, it feels relaxed. Therapeutic modelling / addition method (10.12, No.

2):

S: If, from a world of all possibilities, including those considered impossible, a Mr E. came here with a perceived parallel biography, the person you would have become if all that was intimidating and restrictive had never been necessary for him, but rather, that is the person who, since his youth, childhood, birth and the womb and what felt like many generations of nothing but love, appreciation, respect, belonging, encouragement and everything that is good for people – the person you would then be and are, including the effects on the auditory system, is allowed to sit there once. What is his posture when he comes in here and sits there?

P: Similar to mine, but somehow more relaxed.

---

[176]According to Matthew 2:20.

S: He can move freely. He is deeply relaxed, but when he wants to, he can also jump up, move around, gesticulate, wave his arms about, talk. In my opinion, he also has a resonant voice and looks quite lively. Can you imagine that?

P: Yes.

S: Let yourself be surprised! I think it's really amazing. Please sit down there, for real. Stand up, for real, and walk over there. It's probably very amazing, very surprising and beautiful! *(P. goes to the other seat.)*

The one from just now is looking at you and trying to imagine you being from here. What is different here?

P: Um... um... I can't really think clearly right now. S: Is that because you don't *need* to think

anymore?

P: Exactly.

S: You don't have to think about anything. Because that sense of danger is gone. You have a clear head, you could say...

P: Yes, I do, but it's not at all... I don't know.

S: No need to think. There is silence where before there was thinking or control or vigilance, or what?

P: Yes, I could say it's relaxed, but that's somehow too much to say. It's another interpretation or something...

S: I understand. There is peace in your mind, but on a profound level. P: Exactly.

S: Yes.

P: I can just be there without anything.

S: Yes. Which do you prefer: this or what you had before?

P: *(laughs long and heartily, sounding liberated and somewhat stunned by the question)*

Therapeutic modelling / dissolution of the figures (10.12, No. 4):

S: Okay, next question... I have an idea... I've heard that sometimes someone finds a bottle, opens it, and a genie comes out and says, "Thank you! You have freed me. I was trapped in this bottle for a hundred years. I am returning to my kingdom, from whence I came. Call me when you need me, and I will be at your service." And then the genie disappears. Is it okay if we all let the previous ones and others – you have yourself – disappear as genies and send you on your way from here?

P: Totally fine.

S: Totally fine.

P: Excellent! *(laughs)*

S: What has become of the acoustic system now?

P: Now I can just... It was already gone a few times. Post-hypnotic suggestion (10.18):

S: The holes in the cheese are getting bigger and bigger. We still have a remnant of the "don't think about blue" paradox. This will now disappear in the near future because people don't always come and ask:
"What about the rest?" and then search your inner self with an even smaller magnifying glass or an even better microscope.

P: That's how it feels, yes...

Sound engineer metaphor (10.3, No. 4), reversal of the focus of attention from noise perception to silence perception (10.2):

S: Imagine your brain has a sound engineer at the mixing desk. Instead of just turning things down, he says: We've got a series of switches on the left. We can use them to raise the hearing threshold a little higher so that it's covered up. You don't always have to hear everything. Now we raise the hearing threshold on the left a little more than we lowered the switches on the right for certain frequencies so that it is covered up. Actually, he's more of a sound engineer. He can do that. Maybe he'll do it right away, maybe he'll do it later. If we ask your sound engineer to cover things up by saying, "I don't want to hear that exactly," will he be able to do it right away or should we wait a moment? Let's see if he does it right away.

P: In any case, I can hear the heating for the first time right now. S: Great, terrific. Enjoy

the heating! Enjoy the heating... Can we use the heating to cover up the rest?

P: Yes.

S: That's all we need. Right? P: Yes.

S: Because you have something like the heating everywhere: a little wind, the rustling of leaves... P:

Exactly.

Conclusion:

S: I think we're done... Thank you very much! P:

Thank you very much too!

11.2.2 Feedback from the test subject on the listening experience (summary)

1. Initial situation: "In noisy environments, such as large groups or conferences with a lot of background noise, I have to concentrate hard to filter out the noise because my tinnitus gets louder and distracts me." "There is a humming noise that comes and goes, only on the left side, sometimes louder, sometimes quieter. At the moment, it's barely there. I hear it most when it's very quiet. Then it can be very annoying. And then every few weeks or months there's a very deep humming noise that makes you think it must be coming from outside, it can't be coming from inside. Underneath this high-pitched buzzing is a cotton wool ball of not being able to hear."

2. "Rather the opposite" – in response to the question of whether his inner ear has already been able to regulate the noise down.

3. "There's actually a strange gap right now" – in response to the question about the humming.

4. "It's much less on the right now, but not on the left" – in response to the question about the buzzing.

5. "It's really gone on the right, well, almost gone" – after actually working on the noise on the left.

6. "It's significantly less, but still there. But the one on the right is really... gone!" in response to the question about the noise on the left.

7. "It's... it fluctuates between... it's not really on and off, but it feels a bit like that, it's just at the tipping point... It has... something unreal about it, actually."

8. "The rest? ... What do you mean, the rest?" – in response to the question of what the rest of the noise would look like if you could visualise it.

9. "A downward shift, that's how I would describe it" – in response to the question of what has changed in his acoustic experience.

10. "It's significantly less and now has a real flutter to it... where it's gone, yes, or one or more frequencies are missing."

11. *Silence* – in response to the question of what the occasionally still flickering remnant would look like visualised.

12. "Exactly" – in response to the statement that perhaps it flickers less and less as he looks at it.

13. "The sound has just shifted significantly to the back of my head. The residual sound has somehow faded into the background... It's also higher." – in response to the statement that he can now perceive more finely because "something deaf in his ear has gone away" and "the body has taken the next larger magnifying glass. One sound has disappeared and the next one behind it is focused on."

15. "It has become quieter again... [And] it has become even higher. Although it is difficult to distinguish between quieter and higher."

16. "Now it has reached the back of my neck... Now it is almost in the middle. It's strange, when I concentrate on the right, there is nothing on the right, but it is still in the middle when viewed from the left."

17. "Now what I meant earlier by 'unreal' is actually left. It's no longer clear: is it even a sound anymore, is it even a noise?"

18. "I've had that feeling all along..." – in response to the suggestion that the residual noise was merely imaginary

19. "This memory is still there." – in response to the question about the acoustic system.

20. "It's exactly the same as before, I would say, but it's actually a little bit... nothing on the right, and on the left at the back of my neck, but now a little deeper, actually almost near my throat, the same noise actually" – in response to the question about the acoustic system.

21. "Now I can just... It was gone a few times just now" – in response to the question about the acoustic system.

22. "In any case, I can hear the heating for the first time right now" – in response to the suggestion that his inner ear could regulate the hearing threshold in such a way that the residual noise had disappeared.

23. "Yes" – to the questions: "Can we use the heating to cover the rest?" and: "": That's all we need. Right?"

11.2.3 Comments on the approach

In the following, I would like to explain some aspects of the approach in more detail.

Clarification of objectives:

The test person is asked about the best possible outcome. He states that the tinnitus becomes louder in noisy environments, distracting him and making it difficult or impossible to understand what is being said. He would like to be able to deal with these situations calmly. A reduction in stress in these situations would be satisfactory. The counsellor and therapist suggests a more far-reaching goal, namely that the noises in the ears should become quieter rather than louder when there are loud external noises. To reinforce the perceived plausibility of this solution, the metaphor of an experienced teacher who becomes quieter rather than louder when his class is too noisy is used.

Feedback from the pastoral counsellor and therapist and the test subject on body awareness:

The counsellor and therapist points out changes in the subject's body language that indicate a reduction in stress in order to reinforce this and promote the expectation of further stress-reducing effects. The subject agrees emphatically.

Therapeutic greeting:

See the comment on "Therapeutic greetings" in 12.1.3.

A dissociative greeting ("decoupling the tinnitus... from the stressful experience") and an associative greeting ("downregulating the ear noise with increasing relaxation and serenity") are offered [177].

Explanation of apparent stagnation as irrelevant to the process (trivialisation), placebo anecdote:

See the comment on "Explanation of apparent stagnation" in 12.1.3. The anecdote creates a perceived plausibility for the narrative that the desired effect sometimes only occurs when the conscious mind is distracted, allowing the unconscious mind to work undisturbed.

Medical history:

General information about the experience of noise is requested. The test person is given the choice of which side to start the treatment on. The counsellor and therapist assumes that the side mentioned is the one that promises better or more certain success and is therefore suggestively considered the better one to start with. The subject's observations are confirmed from the perspective of clinical experience. By agreeing with the subject, the counsellor and therapist also tends to reinforce the subject's agreement with their expertise, thereby promoting cooperation.

Psychoeducation:

See the comment under 12.1.3.

Transformation from acoustic to visual experience, paradoxical intervention:

The subject visualises the tinnitus as a "big, fat moth". After the subject indicates that they do not want any change in the position of the "moth", the counsellor/therapist offers to move the moth into the subject's ear and provokes them to push it away from their ear.
He then suggests moving the moth even further away.

The counsellor/therapist emphasises the slowness of the moth and the length of its journey. By provoking impatience in the subject, the achievement of the result is accelerated. In addition, he diverts the subject's scepticism from the question of whether a result will be achieved at all to the question of how long it will take to achieve the desired result.

---

[177] For dissociative, associative and transformative greetings, see Hammel, 2017, p. 24f., Hammel, 2022, p. 271ff.

Reducing or increasing plausibility:

At the same time, the plausibility of the idea that the goal can be achieved is reinforced. Transformation into

visual experience (concrete), therapeutic greetings:

By addressing the moth, the subject's unconscious is addressed, which can control listening behaviour autonomously and is more effective when it is not disturbed by the subject's conscious (referred to as "I" or "you") experience of the subject. Similar to how Ms W.'s autonomy was emphasised, a request is made to the moth, addressing its (or an unconscious entity's) autonomous decision-making ability. Just as a drop of oil improved the effectiveness of the sound engineer's work in the case of Ms W., closing the doors between the test subject and the moth helps to eliminate the noise.

After this initial success, the counsellor and therapist follows the principle of "if something works, do more of it" and goes on to offer interventions that transform acoustic experiences into visual ones.

The subject imagines the "buzzing" as a glass object "with pointed and angular shapes". Similar to before, it is possible to turn it, but the subject hesitates as to whether it can be moved away from the ear or whether he must move. The object is told that it can stay where it is and the subject will move; it will take care of its own needs. Once again, the unconscious is recognised in its autonomy and distinguished from the subject's ego experience.

The test subject is asked to move to another chair so that he is sitting further away from the object. The counsellor and therapist creates the expectation that he will experience something surprising there. The test subject likes this seat better than the previous one. He is offered other seats and the opportunity to use his imagination to move backwards away from the glass object on a swivel chair, so that he experiences it as moving away from him. Mr E. chooses this option and moves away from the glass object, which represents the buzzing in his right ear. He reports that the noise is now "significantly less" on the right. The counsellor and therapist tells him that the glass object can now dissolve like a genie in a bottle. It is not said that Mr E. can dissolve it, but that "the glass thing" can dissolve. Once again, the autonomy of the unconscious is addressed. The narrative plausibility of the process is increased by explaining: "If we miss it, we can call it. That's how it is with genies." In addition, the event is trivialised with "as far as I'm concerned" to make objections seem unnecessary. By saying "It's okay", the test subject accepts the process and thus involuntarily agrees to the further dissolution of the whirring sound.

Feedback from the test subject on body perception:

Mr E. mentions in between that he finds it difficult to think and that his body feels heavy, making it difficult for him to get up and move around. The counsellor and therapist explains that "it doesn't matter" and from then on offers interventions that do not require much thinking or physical movement.

Opening up options:

The counsellor and therapist positively reinforces Mr E.'s insight that the glass object is "stationary" and that he himself must move ("That's a good question!"), then transforms this idea from an extrinsic requirement into an intrinsic possibility: "What do you mean 'must'? We can do that!"

Stabilisation of positive results, normalisation of the new, problem-free anecdote:

The subject's perception of a "gap" in the noise is emphatically acknowledged and the facticity of the noise interruption is reinforced with the word "remarkable" and the remark that this is "unusual" to guard against any questioning.

The anecdote tells of a young man who, after overcoming a serious crisis, said: "At the moment, my only problem is that I don't know who I am without a problem." Even though solving existential problems can lead to a minor identity crisis, the counsellor and therapist expresses the expectation that a "problem-free" existence is preferable to the previous state and that the test subject has the resources to compensate for any disadvantages or side effects of silence. By agreeing with this view (or not contradicting it), the subject acknowledges that the "gap" may also be permanent, thereby stabilising the silence that has been achieved.

Next, a partial sound on the left side is worked on, which the subject describes as a "large "lump of fabric" that they do not want to move away from because they feel affection for it. The counsellor and therapist suggests dividing the object into two parts, one of which symbolises the symptom and the other a value contained within it. When asked what the objects look like, the subject explains with surprise that the value is a "large, comfortable soft pillow" made from the fabric of the previous "lump of fabric". The object symbolising the symptom has disappeared and he therefore does not know what it would otherwise look like. Since Mr E. says, "It's really gone on the right, well, almost gone," and laughs in amazement, it is clear that with the object symbolising the symptom, the noise has also disappeared.

Therapeutic modelling / subtraction method and transformation method, transformation from acoustic to visual experience (personified or concrete)

That which is "really gone, well, almost gone" is imagined as a person in the room.

Mr E. presents the person as being present but not visible ("There is a presence there"). The counsellor assumes that the person does not want to show themselves because they are ashamed or fears judgement, and expresses his respect and appreciation.

Since the person responds to the question by saying that they are both Mr E. and not Mr E., they are split into two people, one of whom is Mr E. and the other is not.

It turns out that one person is Mr E as a six- to seven-year-old boy, while the other is in fact a black object that represents fear and belongs to a situation experienced by the boy. The pillow is mentally copied so that the physical Mr E has one pillow and the boy has a second one of the same kind. A clone of "the warmest, most loving Mr E you can be" goes to the boy, kneels in front of him and shields the boy from the object of fear. This renders it insignificant and it dissolves.

Matryoshka metaphor:

The noise is significantly reduced again. The counsellor and therapist informs the subject that more and more partial noises are disappearing, thereby promoting the expectation that more will disappear, even if something may still be heard for quite some time.

He creates narrative plausibility for this view by telling the story of a matryoshka doll whose shells are removed one after the other. Although each shell may conceal another behind it, each shell is smaller than the previous one, and what remains is not part of what was previously dissolved, but was hidden behind it and can be distinguished from it. The same applies to residual tones hidden behind the previously resolved tones.

Transformation of acoustic experience into visual experience as landscape:

The test person describes the rest of the sound as "like a mirage in the distance". The counsellor and therapist asks the test person to imagine how the mirage dissolves due to a change in the weather.

The test subject explains that the residual noise behaves similarly, as if it switches on and off. When asked again what the "residual" noise looks like as a landscape, the test subject initially does not understand what "residual" is meant. Then he explains that it would be a boulder. However, it must not be changed or destroyed, because it has "something sacred about it".

Transformation from acoustic to physical experience (spatial shift):

The counsellor/therapist suggests shifting the rest of the sound from the ear to the big toe. The toe now feels more present and sensitive, and the inner image of the toe is larger. Something has also changed in the ear, which the subject describes as a "downward pull".

Transformation from acoustic to visual experience:

Although the counsellor/therapist does not understand why something is pulling "downwards" in relation to the noise, because the experience is associated with the tinnitus symptoms, he offers to pull what is pulling even further downwards.

The test subject describes it as a red thread that becomes "thin and frayed" when pulled out. The noise becomes less and less and begins to "flutter", which apparently means that it sometimes disappears and sometimes one or more frequencies drop out.

The test subject reports that the thread is now coming to an end.

The counsellor/therapist and the test subject agree that the remaining residue will be moved to the second largest toe on the left foot. The test subject explains that the toe is now becoming more numb, and the counsellor/therapist explains that the residue sent there probably consists not only of noise, but even more so of "numbness", which means that the phenomenon in the toe is represented as "sensory numbness".

With this explanation, the residual tone disappears and a quieter, higher one becomes audible behind it.

When this tone is now shifted to the third toe, the test subject describes the result in the toe as "tingling... at the tip of the toe". He can now feel his toe more precisely and distinctly than ever before. The last sound has disappeared and been replaced by a quieter, higher one.

This sound is now sent to the fourth toe. The result in the toe is again a "slight tingling sensation at the tip of the toe", but with a lower amplitude and possibly also a lower frequency compared to the previous "tingling". While the first sounds were located in the ear area and the next ones in the back of the head, the current sound is perceived as if it were originating almost in the centre of the neck area.

Almost nothing has changed in the toe, i.e. what has been shifted from the ear to the toe is now at the threshold of perception, even with the best effort to experience it acoustically or kinesthetically. The toe feels most like it is bloated. In the listener's experience, the sound has now become "unreal", so that it is no longer clear whether it is still a sound. This means that the unconscious can apparently still perceive the sound below the hearing threshold and communicate to the conscious mind that something is there, even though conscious hearing no longer perceives it.

When asked to consider it "only as the memory of a previous sound," the test subject says that something inside him resists this, and he feels a kind of fear of loss.

Therapeutic modelling / subtraction method:

The pastoral counsellor and therapist suggests that the subject place a guardian beside him to ensure that the values that should not be lost are preserved, and that if the guardian watches over these values, the very slight residual symptoms will no longer be needed. The subject reports that "the memory is still there," i.e., the previous suggestion to experience the noise as a mere memory has now been implemented.

Now the counsellor and therapist suggests that the subject confront those who are responsible for the creaking in his voice, i.e. for the unusual frequencies. The counsellor and therapist follows his intuition about the sound of the subject's voice and suggests that these may be people who are emotionally burdened and those who avoid showing these emotions in order to protect themselves from sanctions. The subject explains that there are "definitely" exist, thinking first of fifty, then of twenty to thirty people. He knows who they are and what they have experienced. The counsellor and therapist invites the subject to clearly distinguish these figures from himself today, i.e. to dissociate himself from their stressful experiences. As a result, the subject's voice is much more resonant. The source of the noise is now experienced further to the left and further down the neck.

The counsellor/therapist recalls that the subject initially wanted to dissociate fifty traumatised people from himself into the room and then sent only twenty to thirty there. He invites him to let even more people step out of him. The subject imagines them walking out of him and reacts with a relieved, gurgling laugh. The counsellor and therapist suggests sending over more people who are responsible for a nasal sound, which sounds as if there are some tears in the upper nasal area. The subject agrees.

The counsellor and therapist goes on to suggest referring those who are responsible for shallow breathing, which he intuitively associates with them "not daring to breathe loudly or speak loudly". The test subject agrees and adds: "Yes, especially the one who would like to scream."

The pastor and therapist interprets the situation as involving experiences of violence in childhood and that the test subject is no longer helplessly at the mercy of others' behaviour in adulthood, as he was back then. To increase the perceived plausibility of this, he recounts how the angel in the story of the flight to Egypt says to Joseph in a dream: "Return home, for those who sought the life of the child are no more..." and suggests informing the boy with the red pillow that the people who threatened or abused him no longer pose a threat. He can now scream if he wants to. No one can or will punish him for it anymore. The test subject says the boy is sceptical.

The boy is told that he does not have to cry, but that he may and can if he wants to, and that he is also allowed to be sceptical. The test subject, who is looking at the boy in his mind's eye, makes a sound that suggests his abdominal muscles are relaxing, and he says that he feels relieved and relaxed.

Behind this approach lies the understanding that, from a biological perspective, the past, memory (including bodily memory) is in the present, and that everything that happens now can also change memory (or bodily memory) in the present – and from now on[178]. When we help the boy, who is a projection of memory in the present, we have helped the man.

Therapeutic modelling / addition process:

Mr E. is brought into the room as he would be if all the intimidation and restrictions since birth and the womb and perceived generations of his family history

[178] Hammel, 2022, p. 43.

had not happened and he had instead experienced "love, appreciation, respect ... and everything that is good for people". Mr E is asked to imagine what he looks like and then to stand where that person stands. The counsellor and therapist announces that it will be "astonishing, very surprising and beautiful".

There, the test subject experiences an unusually clear mind that needs nothing to think about and nothing to control, calmness, a deeply relaxed state and a pure being that is difficult to describe.

Therapeutic modelling / dissolution of the figures:

The counsellor and therapist suggests that the people he has seen in his mind's eye should be dissolved like genies in a bottle. The test subject agrees and says that the noise "has already gone away a few times".

Post-hypnotic suggestion:

The counsellor and therapist confirms and reinforces this experience on a visual level by saying, "The holes in the cheese are getting bigger and bigger." He explains the occasional remnants of the symptoms by saying that he still sometimes finds noises when he looks for them ("don't think of blue" paradox), but that this will soon stop because he will no longer look for them if the counsellor/therapist no longer asks about them and thus repeatedly lowers the hearing threshold (described in such a way that his "inner self... searches with an even smaller magnifying glass or an even better microscope").

Sound engineer metaphor, reversal of the focus of attention from noise perception to silence perception:

The counsellor/therapist asks the subject to imagine a sound engineer with a mixing desk who pulls certain levers for the hearing threshold upwards (until they are higher than the noise switches) so that any residual noise disappears below the hearing threshold. The sound engineer, as initially named, is now redefined as "actually a silence engineer".
By giving the subject's subconscious (addressed in the third person by the sound technician) the choice: "Maybe he'll do it right away, and maybe he'll do it later," any sceptical voices are distracted from the possibility that the sound technician might not be able to cover up the residual noise at all.

The test subject reports that he can now hear the heating for the first time. The test subject agrees with the idea that noises such as the heating, wind and rustling leaves can be used to cover up any residual noise.

Conclusion:

Both conversation partners agree that the session can be ended here.

11.3 Mr K.

Mr K. is 34 years old at the time of testing and works as a violist in an orchestra. At the time the tinnitus developed, he was a student at a music school. For about 18 years, he has experienced permanent tinnitus on the right side at 15 kHz ("similar to an old television"). Because the sound is quiet, he only notices it when the environment is quiet. The sound does not bother him, as he often does not notice it when he is not paying attention to it. The tinnitus developed in connection with a middle ear infection. He is sensitive to "high-pitched whistling sounds" (hyperacusis), even when they are very quiet, such as the noises made by some chargers.

11.3.1 Treatment history

Medical history:

S: You're dealing with tinnitus noises, right? P: Yes.

S: What kind of noises are they?

P: I would describe it as the sound of my grandmother's old television, a very high-pitched tone that is difficult to identify, probably even several tones.

S: How long have you had it?

P: When I was 16 or 17, I had a middle ear infection and then suddenly it was there. I wondered what it was and thought it would probably go away eventually, but I've had it ever since.

Psychoeducation on the ambivalence of precision and clarity, part 1 (10.4, no. 8):

S: There is an audible threshold, meaning a volume or quietness at which you can hear something, and yours is probably low.

P: Very low.

S: I suspected as much. Now there is an ambivalence between two goals in the body.

In terms of pain perception, you could put it this way: a woman with paraplegia told me that it's rubbish not to feel pain because you don't notice when you're injured and possibly in danger. Others tell me they'd rather feel nothing than feel the pain they're in. So the body has two goals, and this also applies to the area of hearing: one is to perceive as accurately, diversely and differentially as possible, i.e. to achieve the highest possible complexity of perception. This requires the lowest possible hearing threshold or perception threshold – that way, you get a lot of differentiated data delivered to the brain. The second goal is reduction to the essentials. With a higher hearing threshold, which only hears slightly louder things, you get the essentials delivered to you instead of all kinds of things and everything possible in all the details.
In other words, there is an ambivalence between precision (high complexity of hearing) and clarity (lower complexity of hearing).

Therapeutic greeting (10.6), psychoeducation on the ambivalence of precision and clarity, part 2, suggestion for involuntary noise suppression (10.1, no. 2 and no. 3):

S: You can give your inner self a nice greeting: if it gives you the ability to reduce the complexity of hearing when necessary, then it does not lose the ability to have a very high complexity of hearing at other times when needed. It could be extremely useful for enjoying a concert, for example, if you are less able to distinguish between hundredths of a semitone in a refined and differentiated manner. You will enjoy listening more if your brain reduces the complexity so that you can hear what is intended, what is meant, clearly. If, on the other hand, you want to perfect your own playing, then in some cases it can be useful to have maximum accuracy. As a listener at a concert, I would recommend that your brain prioritise clarity – less complexity, but a focus on the essentials – and as a musician who wants to perfect their skills, I would recommend a high amount of data and thus a low hearing threshold in some cases. By sometimes focusing on the lower amount of data, your brain does not lose the ability to have the high amount of data for other needs, but rather increases its ability to decide between complexity and precision on the one hand and simplicity and clarity on the other. Both are values. The opposite of a value does not have to be a negative value; rather, it is wiser to see the opposite of a value as the reverse value. It is wise to call the opposite of "generous" not "stingy" but "thrifty," and

the opposite of "thrifty" not "wasteful" but "generous". I treat two opposing or complementary good intentions as both valuable. And here we are talking about precision, i.e. high complexity, versus simplicity and clarity. Tell your brain that both are values, and that it is not the person who maximises one value who is free, but the person who can do one thing and its opposite. That's my greeting to your brain, so to speak...

P: That's a good greeting. I'll pass it on *(laughs).*

Feedback from the pastoral counsellor and therapist on body observation:

S: Yes, get it straight, and your laughter is feedback from your gut or perhaps from your mitochondria: we have discovered something that is liberating. I am sure of this because I work a lot with trauma therapy, etc., and can observe when bubbling laughter or crying occurs. These are usually relevant responses from deep within the system.

Psychoeducation on the ambivalence of precision and clarity, part 3:

S: And because you are probably very focused on perfecting your skills, it may be that the other side is less focused – the side of "reducing complexity, clarity and simplicity", even though it is often very useful, for example, for the ability to enjoy music you hear or for the ability to perceive atmosphere. For example, if you want to focus on expressing a mood in music, you don't need the finest little details, then you have more capacity to feel the voices in the sound spectrum, right?

P: Yes!

S: I think it's better to ignore some things; the focus is now on "mood". Feedback from the test subject on the

listening experience:

S: It is possible that something has already changed in your hearing if you pay close attention to your ear stories, because your brain is able to implement this greeting immediately if it wants to. Could it be that something has already changed in your hearing?

P: Yes, exactly... When I pay attention to it – because I'm here for that reason now, the tinnitus is more present – but I notice that the attitude alone makes a difference. It's not completely gone, but...

S: How do you notice the difference?

P: I have the feeling that the spectrum is no longer as broad, except for one main tone, so to speak, and it is a little quieter.

Transformation of acoustic experience into bodily experience (10.9, No. 2) or visual experience (10.8, No. 2):

S: Let's imagine we could transform your residual noise into a physical sensation, a tingling, trembling, warmth, coldness, itching. Would anything come to mind?

P: Yes, I have something (longer silence). Well, in any case, I imagine something flowing, maybe a light or something like that.

S: Okay. Let's change the channel of perception and imagine that you could turn it into something colourful or luminous. Would it be white or would it have a colour?

P: More yellow, perhaps.

S: Turn it into a yellow light. Is it always the same yellow, or is it sometimes orange-yellow, sometimes green-yellow, sometimes lighter or darker?

P: No, I would say it's a little different, maybe yellow-orange, and it moves a little bit too.

S: If you could change it to a different colour, what colour would it be? P: I actually like it this way

(laughs).

S: It should stay that way. And in terms of brightness? Brighter or less bright? P: It's

actually pleasant.

S: What happened to the previous noise? Is it still there or gone, the same or different?

P: It's still there, but it feels better.

S: Is this "feeling" like a physical sensation or an emotion – can you describe it?

P: I would say it's like a physical sensation. It's not something that's up here *(points to his head),* but something that's allowed to flow through the body.

Transformation of acoustic experience into emotions (10.10), part 1:

S: If we could transform your residual noise into an emotion or an emotional control such as rigidity and numbness, what would that be – or would it be impossible to transform it into an emotion or something similar to an emotion?

P: To be honest, I find that difficult.

S: Your gesture with your finger on your nose would suggest to me: hurt, annoyance, embarrassment, perhaps even a hint of sadness, but that may not be the case. If you imagine someone being patronising towards you, intimidating you, lecturing you, perhaps even slightly annoying you, can you feel something like that?

P: Yes, I can.

S: Now that you've paid attention to the emotions, focus again on where the ringing in your ears was before. What has changed now? *(Church bells have been ringing outside for some time.)*

P: I hear bells *(laughs).*

S: That's a good answer. It seems irrelevant, but it probably means something like there is more capacity for perception of the ringing bells and less relevance or capacity for the previous sound. So the ringing of the bells has become more relevant or louder or more noticeable and the sound has "gone away" in some way, I suppose. Is that how you would describe it?

P: It's still there.

Use of real sounds for involuntary identification and elimination of tinnitus sounds (10.5, No. 2):

S: Listen to the bells again! See if you can find any overtones that match the residual tones?

P: They don't match very well.

S: Has anything changed after listening to the bells? P: I feel like the main tone is

a little less intense.

Transformation of acoustic experience into emotions, part 2:

S: Let's imagine once again that we could transform the residual tone into emotions. What would they be? Do you have any ideas?

P: I think it has really decreased! *(laughs impulsively)* Well, somehow it has become softer. Psychoeducation (10.4):

S: I'm not sure if that's quite right, but I would guess that it could be...

The partial tones may have arisen at different times under different stresses in different biographical phases. Some of them (perhaps all of them) arose at the time of the middle ear infection, but the fact that this happened was not only due to the middle ear infection, but also to emotional situations at the time of the middle ear infection, back then, at the age of 16 or 17. It could have to do with conflicts, suppressed anger or annoyance, it could be that I can't prove it...

Transformation from acoustic to visual experience (with age regression, 10.8, No. 5), transformation from acoustic experience to emotions, part 3:

S: If we imagine you could take the residual sounds to the time of the middle ear infection or, if your inner self wants to, to another time before or after – and we would send a Mr K. on a journey through time with the residual noise, and he would leave it where it originated, at the time of the middle ear infection or at another time, and you are welcome to feel the corresponding emotional state. Does a feeling come to mind?

P: I can think of some formative emotions from that time...

S: I see a twitch in your arms and foot, like anger, protest, stamping, rebellion, between controlling anger, pushing it away and expressing it. Can you imagine something like that?

P: Yes, I can...

S: Also connected with pushing something away, suppressing it?

P: Exactly. Yes, more like that.

Psychoeducation (ambivalence of emotional expression and emotional control):

S: There is this ambivalence between suppressing and expressing anger, rage, protest. Suppressing can help prevent further hurt, but it's like covering a geyser with concrete – it also increases the pressure. In my view, inflammation in the head area is often related to suppressed anger. Feel into this ambivalence. Feel into the emotional state and now go back to the acoustic system. What might be different there?

P: I have the feeling it triggers the tinnitus a little *(laughs).*

Paradoxical interventions (10.5, No. 2 and No. 4), utilisation as a warning signal for possible overload (10.15, No. 3), Part 1:

S: You can like that too. Tell your tinnitus: Great! Let's try making it even louder. Can it do it?

P: It definitely becomes more present.

S: Tell your tinnitus, if it is a warning sign for suppressed anger and a reaction to humiliation and not being appreciated: Please continue to warn and alert me and point out: "You can't treat me like this! I am a valuable person!" Tell your tinnitus: "I think that's great!" It's allowed to do that!

Transformation from acoustic to physical experience (10.9, No. 1), Therapeutic greetings:

S: And at the same time, we could ask your tinnitus to move to your left big toe, whatever that means. Interestingly, that works.

S: Tell the tinnitus to go there. It's great that it warns and alerts you and says, "That's no way to treat Mr K. It doesn't fit with my values. I won't let myself be treated like that. I don't want to be treated like that. I deserve to be loved and respected and listened to." It's okay for it to warn you, but maybe somewhere other than in your ear would be better. It can warn you in your left big toe – and it can warn you because it represents values: "That's no way to treat me, I am a valuable person. I don't deserve that, it's unfair!" "Yes, that's right," I say. "You're right!" If we move it to your left big toe, how does your big toe feel then?

P: A little more important *(laughs)*!

S: That's well described! Some would say more present, more alert, thicker, warmer, you call it more important. You can feel that, can't you?

P: Yes.

S: We say to your toe: "Thank you, and please get in touch if necessary, and get in touch with Mr K. and tell him that's no way to treat Mr K.!"

Feedback from the test subject on the hearing experience:

S: Now that your toe is more important, what is different in your ear?

P: It's a bit more relaxed. My head is a bit more relaxed.

S: Great! Very good. This phenomenon has a lot to do with muscle tension, and the muscle tension probably had something to do with the conflict between emotion and emotional control. This causes you to have increased muscle tension. If we can reduce your muscle tension, we will also have a good basis for therapy on this level.

Is the residual noise on the right or left?

P: A little bit on the right side. But it has changed a little. I feel like it has spread out a little more.

Transformation from acoustic to visual experience (10.8, No. 2), Part 1:

S: If you could turn it into something visible, what shape, structure or colour would it have?

P: I always see something like a line. S: Does it have a

colour?

P: No, more like light... white.

S: Is it in front of you or inside

you?

P: Here... *(points with his finger to a vertical line close to his body).*

S: Would you prefer it to be closer or further away?

P: It's more comfortable when it's further away... rather further away.

S: Look how far away you want it to be... Could it be split into different parts like a spectrum, or is it better as *a* line?

P: I don't know, you could try that. I'm imagining unfolding it, then it would form an arc and become colourful.

S: What else would you like to change about it? Would you like to fan it out 360°, or fan it out backwards, or fold it flat?

P: No, upright is fine. Or in 3D. But somehow I'm only imagining one half, just the upper half, or a hemisphere would also be nice.

S: What might have changed in your ear? P: It's become

a bit rounder.

S: Rounded... Is that more comfortable,

"rounded"? P: Yes.

Sound engineer metaphor, part 1 (10.3, no. 4) / Reducing individual tinnitus noises:

S: Let's imagine that there is a sound engineer sitting in your brain. We can take him out and sit him down, and he has a mixing desk and can turn certain noises or hearing abilities up and down, and somewhere there is a switch or switches for the residual noises. Does he have one or more switches? What do you think, does he have one or more switches to turn down?

P: Several.

S: How many do you

think? P: Five... intuitively.

S: Look where the switches are on the mixing console, and then he should pull the one that works best to zero or even below zero: Flllp! – What changes?

P: I have the feeling that one of the higher frequencies is now gone.

S: Exactly. Now he should take the next one of the five that he finds easiest to pull down, and – Flllp! – down to zero or below! What has changed?

P: It's kind of difficult. I don't know if anything has changed or not.

S: I suspect so, but now he should take the next one – Flllp! What has changed now? P: Yes. Maybe a little

more compact.

S: I'm pretty sure. Number four: Flllp! P: Hm.

S: Number five: Flllp!

Sound engineer metaphor, part 2: Raising hearing thresholds, psychoeducation on the ambivalence of clarity and precision, part 3:

S: The first step was to "make noises quieter". Now the sound engineer has various switches on the left side of his mixing console that are actually even more important than the first five. These are, so to speak, the silence switches, the switches with which he can raise the hearing threshold for specific frequencies so that you only start to hear at a slightly louder point.

It's not about raising the hearing threshold for all frequencies at once, but specifically for the ones you've picked. For the rest, it can remain low. This gives you maximum auditory differentiation for the remaining frequencies and a slightly more focused hearing for these frequencies. In other words, clear hearing for these frequencies and precise hearing for the other frequencies.

Now he should *pull up the switches* on the left one by one... *(S. mimics pulling up five switches)* "flllp... flllp... flllp... flllp... flllp!" – pull up the switches for the hearing thresholds one after the other so that they are higher on the left than where the switches are on the right. Perhaps we only need two or three of the hearing threshold switches, just where there is residual noise.

P: Yes, that changes

something. S: How is it now?

P: I don't think I can hold it in very well. Now it's getting worse again, so the switches are going down again.

Therapeutic greeting, ecological metaphor, psychoeducation on the ambivalence of precision and clarity, part 4:

S: Yes, that doesn't surprise me. Send your inner self a warm greeting: We are entering – hopefully – a new era where people think in terms of ecology and value balances instead of maximising individual values, such as profit maximisation. It is no longer a question of having a maximum number of foxes in a forest and then wondering why the number of hares is minimal, but rather of having quite a few foxes and quite a few hares. A healthy forest is better described by the number of foxes times the number of hares than by the number of foxes or hares. Many specimens of many species say more about a healthy ecosystem than a maximum number *of one* species. The same applies to value systems: they are stable when they are organised ecologically. We have conflicting values such as self-protection and caring, or adaptability and assertiveness, and it is better to have both fairly high than to have one at a maximum and the other at a minimum. For example, we need a fairly high ability to block out sounds in order to focus on atmospheres and a fairly high ability to hear complexity, both of which can be regulated very well as needed.

Don't think of blue paradox, therapeutic greeting:

S: You are used to practising precision listening. After we have flipped the switches, you inadvertently lower the hearing threshold by asking, "Is it still there? Is it still there? Is the sound gone? Is the sound gone?"

P: Yes.

S: Send your inner self a warm greeting: we want you to forget this question and not care about it anymore. We can't do that immediately on command – otherwise we would have the paradox of "Don't think about blue!" – Saying "You mustn't think about it" doesn't help at all; instead, it is – greetings to your inner self – an instruction to forget and block out the question "Is it still there?" more and more often.

Reservoir metaphor, part 1 (10.3, no. 6):

S: It's as if some people had a plan to drain the water from a reservoir to see if the villages that were submerged back then are still down there. *(Sounding annoyed and tired;)* Yes, if we lower the water completely, the ruins of the villages that were submerged back then are still there... In a soundproof room, everyone would have tinnitus. Of course there is tinnitus below the hearing thresholds! Definitely! In every person! There is a lot of tinnitus below the hearing thresholds. The trick is to keep the hearing thresholds above the tinnitus so that irrelevant information is blocked out.

Filting out involuntary bodily reactions (10.1, No. 1):

S: This works very well in many areas. Under normal conditions, you don't feel your bowel movements, even though the muscles there are among the strongest in the body. You don't usually feel your heartbeat, even though the heart muscle is one of the strongest in the body, and you don't feel your

eyelid closure reflex and swallowing reflex unless you pay attention to them, because your inner wisdom says: "Irrelevant, not interesting, ignored". We can feel some things effortlessly if we want to, such as the swallowing reflex and the eyelid closure reflex, but we would have to practise feeling our bowel movements or heartbeat if we wanted to. However, only people who focus on it paranoidly feel such things constantly.

Sound engineer metaphor, part 3: Raising and lowering the hearing threshold as needed

So the goal with this phenomenon is for your inner self to raise the hearing threshold switches higher than the switches for the noise – in recognition of the fact: "Yes, we can also lower them, then we will hear it again. But we can also raise them, then it will be gone again." Yes?

P: Yes. Yes.

S: The fact that it was gone for a moment or was pretty good and then came back was due to the question: "Can't I hear it anymore?" Then your inner self says, "Hey, I can also turn the switches down, then you can hear it again." The goal is for you to be able to turn it up, recognising that you can also turn it down; then it's back again. With your keen hearing, you will always be able to restore the tinnitus if you want to, by giving your unconscious mind an instruction.

Anecdote about restored tinnitus, psychoeducation for hearing threshold reduction:

S: At a conference workshop, I happened to have no one who volunteered for a tinnitus therapy demonstration. So I asked the intern, "Can we pretend you have it so I can demonstrate what I would do if you had it?" She said, "Yes, that's funny: I used to have it." Then I said, "Yes, let's bring it back." It was easy. Within a minute, we had her tinnitus back, demonstrated what we do, and got rid of it again. It's a question of how the hearing threshold and all that is set.

If your inner self is focused solely on maximum precision and accurate hearing, which seems useful for professional reasons, but all you really need is to be able to do it when necessary, it is not at all useful to live as if you had to. Normally, it is good to set your hearing threshold so that it is above the tinnitus noise everywhere – greetings to your brain – and in exceptional cases, your inner self can decide: I accept that I will lower it for certain frequencies, then I will have a little tinnitus and hear even more accurately. That's okay. In most cases, it's more useful to have your hearing threshold set above the tinnitus noise so that irrelevant sounds are blocked out, similar to how we don't want to constantly think about our swallowing reflex. Why should we? It's not important, right?

P: Yes.

Therapeutic greeting, feedback from the test person on their hearing experience, accompanying sleep disorders and depressive tendencies improve (10.14):

S: Tell your inner self that it is doing a very good job right now. – How is it now? P: Relaxed. The

tinnitus is there – but relaxed.

S: Would you describe it as "quiet" or "soft," or is it an emotional "relaxed"? P: Soft too – and emotionally

relaxed as well.

S: I assume that there are circular developments. I assume that you will sleep even better than before in the near future and that this will have an effect on these phenomena.

Homework:

S: You are welcome to do this exercise in the near future, transforming the residual noises into emotions and then feeling into them, or sending a person from within yourself back to your younger years – teenage years, childhood, infancy – wherever this ambivalence of expressing emotions and controlling emotions plays a role, back to the times from which it originates.

Reservoir metaphor, part 2 (10.3, no. 6), bodyguard metaphor (10.12, no. 3 and 10.13, no. 3), utilisation as a warning signal for possible overload, part 2 (10.15, no. 3):

S: Let's finish by creating something else. Imagine a reservoir. The lake is not completely full, but only up to a certain level. We imagine the residual noises that might still be there as a landscape element above the water level. What might they be? If there are any left...

P: I just imagined a church spire...

Send an engineer to the water outlet. He should turn the big wheel there so that only a little water comes out at the bottom and the reservoir fills up until the water level above the spire has disappeared, so that the spire has completely disappeared and you can only see the reflective lake.

S: The engineer can now press the automatic button, which ensures that the set height is maintained, even during periods of heat and dryness or rain, until he sets something else, which he can do if necessary. What is different about the hearing now?

P: I think a little bit is still sticking out (laughs). S: That's entirely possible.

It's filtering out more and more partial tones. In that respect, our picture is

a little imprecise.

P: Then there are several church spires...

S: It's as if we're flooding a field of broken reeds and fewer and fewer are sticking out until, in the end, there are only one or two left at different heights.

P: Yes!

S: The residual tone you had is, strictly speaking, divisible again into partial tones, some of which disappear and others remain, which are then specifically focused on.

P: Yes!

S: We tell the engineer to raise the water level again until no tip is visible. Perhaps he would prefer it if one remained.

If he thinks it's important as a warning signal, we tell him to optimise the warning signal in the big toe instead – it can keep watch like a bodyguard. How is it now?

P: There's still something

there. S: What's different?

P: It's somehow smaller. The tip is smaller.

S: Some people describe it as quieter. I would say that some of the overtones are gone again... P: That

could well be, yes!

S: ...so that the rest can be subdivided into partial tones, if you look at it closely. At some point, you could also describe that as quieter.

Therapeutic greetings, posthypnotic suggestion (10.18):

S: Tell your inner self to continue and develop this further, even though we are no longer working together, so that it becomes even better subliminally, precisely because we are no longer consciously working on it – a bit like when you try to remember an actor or primary school teacher, you can't think of them, and then at some point, when you're not even thinking about it, it clicks, and the name comes to you. Your inner self should continue the optimisation processes in a similar way. That will happen.

Transformation from acoustic to visual experience (as a ritual, 10.8, No. 1): S: Where

is the rest, on the right or on the left?

P: Right.

S: Would you allow me to pull it out of your ear? P: Yes.

S: Watch out, this is going to be amazing. So... *(pantomimes pulling something out of his ear).* Brrr... I get the shivers when I do that! What colour is the thing I'm pulling out? Or what kind of texture does it have?

P: Like a rope, but a thin one. It's light, but not transparent.

S: What we're pulling out here had a strange blockage in it, I noticed it in your voice, like a stutter, that's part of it. How does it change as I pull it out now? Does it become thinner, finer or lighter, or darker, thinner or something else?

P: Thinner, but with small fibres sticking out like a rope.

S: As far as I can tell, the fibre ends mean that partial tones cease (I see this in parallel with the twitching of your arm), and this makes the rest thinner. Is it right if I wind this onto a spool?

P: Yes, of course.

S: Is it okay if I attach a motor to it? P: Yes.

S: Right! Then I'll switch it on *(imitates the sound of the motor winding up the spool):* Zzzzzzt... If this continues, faster and faster, how does it change... I wouldn't call it a 'rope' anymore, but rather a 'string' or 'thread'?

P: Yes, it becomes thinner and smoother.

S: Yes, thinner and thinner, smoother and smoother. If we keep going, at some point it will be like a thread, like a silk thread, at some point like a spider's web, like a very fine weaving thread from caterpillars or mites, at some point even finer and thinner – I also notice a reaction in your muscles, in your movements – at some point it's like a mushroom mycelium thread, which you can only see under a microscope, at some point it's like a DNA thread, and at some point it goes "flpflpflp" and is through.

P: Yes.

S: Is everything already on the reel, or is there more to come?

P: It's possible that there will be more at some point. S: And how is it at

the moment?

P: Pretty good.

S: So good that we can stop, or should we work on any remaining bits? Or should we stop because 'pretty good' is just a cautious synonym for 'very good'? There are people who never say 'very good', but for whom 'pretty good' is the highest praise...

P: No, there's more than "pretty good". S: Shall

we fill a second spool? P: Yes.

S: On the right ear again? P: Yes.

S *(pantomimically pulls something out of his ear and winds it onto a spool*). Winding it up... Does it have a colour and a texture?

P: It's orange now and rather flat.

S: I'll turn the motor back on, OK? P: Yes.

S: *(Imitates the sound of the motor winding up a thread)*: Zzzzzzzzzzzz... Look how it comes out and how it changes in the process. Is it all out yet or is there still something coming?

P: There's still a little bit left... *(long silence)* That's it *(laughs)*! S: How is your acoustic

system?

P: Fine.

Conclusion:

S: Great. We're done. Thank you!

11.3.2 Feedback from the test subject on the listening experience (summary)

1. "I would describe it as the sound of my grandmother's old television, a very high-pitched tone that is difficult to identify, probably even several tones."

2. "I feel like the spectrum isn't as wide anymore, except for one main tone, so to speak, and it's a little quieter."

3. "It's still there, but it feels better."

4. "I hear bells." – referring to church bells ringing outside

5. "It's still there."

6. "I feel like the main tone is a little less strong."

7. "I think it's really gotten less! *(laughs impulsively)* Well, somehow it's gotten softer."

8. "I have the feeling that it triggers the tinnitus a little bit" – with regard to the ambivalence of expressed and suppressed anger.

9. "It definitely becomes more present" – in response to the request to try to make the tinnitus even louder.

10. "It's a bit more relaxed. My head is a bit more relaxed."

11. "It has changed a bit. I feel like it has spread out a bit more."

12. "It's become a little rounder." "Yes" – in response to the question, "Is that more comfortable...?"

13. "I have the feeling that one of the higher frequencies is now gone."

14. "It's kind of difficult. I don't know if anything has changed or not."

15. "Maybe [the residual noise] is a little more compact."

16. "Yes, that changes something... I don't think I can hold it so well. Now it's getting more again, so the switches [for the hearing threshold] are going down again."

17. "The tinnitus is there – but relaxed... Soft too."

18. "There's still something there. It's somehow smaller."

19. "That could well be, yes!" – in response to the comment: "Some describe it as quieter. I would say that some of the overtones are gone again..."

20. "Pretty good."

21. "There's still a little bit left... *(longer silence)* That's it!"

22. "Good." – in response to the question: "How's your acoustic system?"

11.3.3 Comments on the procedure

In the following, I would like to explain some aspects of the procedure in more detail.

Clarification of objectives:

No explicit clarification of objectives takes place at the outset; instead, the information from the written medical history is used. Stress reduction is not an objective because Mr E. does not experience stress due to tinnitus (according to the Goebel-Hiller tinnitus questionnaire and medical history form). His objective is to reduce the noise in quiet environments and his sensitivity to high-pitched sounds.

Medical history:

Little information is obtained about the nature and frequency of the ear noises and their origin.

Psychoeducation on the ambivalence of precision and clarity:

Young people rarely have tinnitus, and musicians less often than non-musicians. The subject is not bothered by his tinnitus. The counsellor and therapist assumes that his hearing, which allows the tinnitus, has a good intention, presumably unconscious. In other words, he bases the treatment on the assumption that Mr K.'s unconscious mind accepts the tinnitus on the basis of certain value judgements. One idea is that perfectionist tendencies may play a role in the development of tinnitus. These are often found in people with tinnitus and frequently also in professional musicians.

From the perspective of the pastoral counsellor and therapist, the goal of treatment in this case is for the musician to involuntarily regulate his hearing even better so that he can accept or turn off whatever type of hearing is currently beneficial. He talks about the flexible adjustability of the hearing threshold, which, according to the musician's own observations and Peter Schneider's measurements, is normally extremely low. He addresses the advantages of a higher and a comparatively low hearing threshold. To illustrate this, he refers to the pain threshold, which can also be regulated by the body. Feeling little or nothing has the disadvantage that

you may not notice when you are in danger. Feeling too much causes suffering and consumes energy that could possibly be better used elsewhere. The body therefore has two goals, and this also applies to hearing: a low hearing threshold is good for precise hearing, i.e. for a high complexity of the information obtained, while a high hearing threshold is good for clear hearing, i.e. for reducing complexity to a minimum and focusing on the essentials.

If the goal is to relax and enjoy a concert, it may be useful to block out the musicians' mistakes and inaccuracies. In this case, a higher hearing threshold, less precise frequency discrimination, etc. may be beneficial. However, if the goal is to perfect one's own playing, it is useful to lower the hearing threshold, sharpen frequency discrimination, etc. The test subject is informed that he will not lose the ability to hear with the utmost precision when necessary if he filters out the unimportant details on other occasions in order to optimise his enjoyment. On the contrary, when their system learns to hear less accurately at times, it improves "the ability to decide between complexity and precision on the one hand, and simplicity and clarity on the other". It is explained that both are values and that the opposite of a value does not need to be regarded as a negative value, but can be considered as the opposite value. The test subject is asked to tell his brain that it is not the person who maximises a value who is free, but the person who can do one thing and its opposite. The test subject agrees emphatically, laughs heartily and says he will tell his brain.

Feedback from the test subject on hearing:

The test subject reports that the tinnitus is now more present because he is paying attention to it, but the sound spectrum of the ear noise is less broad, i.e. some of the sounds are missing. Essentially, only one main sound remains. Presumably, some of the sounds have disappeared below the hearing threshold due to an increase in the hearing threshold.

Transformation of acoustic experience into physical experience or visual experience:

The test subject is invited to transform the residual noise into a physical sensation. He surprisingly suggests transforming it into a yellow-orange light. He likes the light and does not want it to be changed. The noise in his ear "feels better", whereby "feel" refers to a physical sensation, "something that is allowed to flow through the body".

Utilisation of real sounds for involuntary identification and elimination of tinnitus sounds:

The test person is asked to compare the overtones of the bells, which have been ringing outside for some time, with those of his tinnitus. The aim of the intervention is to get his brain to identify the tinnitus sounds as accurately as possible so that they can be targeted and resolved. The test person then reports that the main tone is "a little less intense".

Transformation of acoustic experience into emotions:

What is striking and unusual in comparison with other subjects is that, even after repeated questioning, the subject apparently has no idea what feeling would arise if the ringing in his ears could be transformed into an emotion. Instead, he explains with obvious surprise that the noise in his ear has become weaker and softer. It seems that the unconscious has implemented the intervention without the conscious mind having carried out this transformation. One explanation could be that experiencing or reliving certain emotions has helped him, which he would feel if he had consciously implemented the intervention. The counsellor and therapist considers that there may have been conflicts associated with suppressed anger or rage at the time the tinnitus developed (triggered by a middle ear infection at the age of 16 or 17). The statement suggests that the suppressed emotions, which may have led to the

Contributing factors to the development of tinnitus are reassociated with the initial situation and thereby dissociated from the current situation[179].

Age regression (bringing sounds into the past), transformation of acoustic experience into emotions:

Based on this hypothesis, a journey through time is proposed: one version of the test person should go back to the time when the symptom first appeared, release the residual noises there and feel the corresponding emotional state. The test subject "recalls formative emotions from that time". Based on the subject's physical reactions, the counsellor and therapist suspects an ambivalence between expressing and suppressing anger and protest. The test subject confirms this and states that the suppression of emotion is more pronounced than the aspect of expression.

Psychoeducation (ambivalence between expressing and controlling emotions):

The counsellor/therapist acknowledges the good intention behind suppressing emotions, which can help to avoid negative sanctions from the social environment, and symbolises the disadvantage in the image of a geyser being covered in concrete. The pressure under the plug increases. He explains that inflammation in the throat and head area is often associated with suppressed feelings, so there could be a connection here. This explanation also serves the purpose of linking the emotions in question – and now also the control of emotions – to the situation in which the tinnitus arose, thereby decoupling them from the current experience. The test subject is asked to consciously feel the ambivalence between expressed and suppressed anger and then to pay attention to his hearing again. He says that this "triggers" the tinnitus and laughs.

Paradoxical intervention:

The initial suggestion is to amplify the tinnitus and then allow it to serve as a "warning light for suppressed anger," praising it for its activity and encouraging more of the same. The idea behind this is that it – and the emotions behind it – may be amplified when ignored and then possibly weakened when noticed, appreciated and encouraged.

Transformation from acoustic to physical experience, Therapeutic greetings:

The test subject is asked to shift the tinnitus to their left big toe. They are welcome to sound the alarm and warn others, but they should do so there! The idea behind this is to counteract the ambivalence of expressions and suppression of emotions with a therapeutic counter-bonding (ambivalence pacing)[180]: the symptom is simultaneously encouraged to continue and intensify, and asked to do so in an area where, based on experience, it is much less noticeable. Addressing the tinnitus instead of the subject herself aims to address the subject's unconscious, which can be more closely associated with the expression of emotions, independently of her conscious mind, which is more closely associated with emotional control.

Feedback from the subject on the listening experience:

The test subject reports that his head feels "a little more relaxed". The residual noise has changed, it has "spread out a little more". As before, the test subject describes his perceptions synesthetically: he often describes noises in visual or kinesthetic terms.

---

[179] Hammel, 2022, p. 41f.
[180] On therapeutic double binds, see Watzlawick, 1971, p. 224ff., Erickson & Rossi, 1981, p. 66ff., Hammel, 2009, p. 218ff.

Transformation from acoustic to visual experience

The test subject transforms the residual noise into a white, vertical line, which he moves away from himself and then fans out, causing it to become colourful. He perceives the fan as an arc and folds it down forwards and backwards, turning it into the upper half of a hemisphere.

The noise in his ear has become "rounder", which he finds pleasant. Sound engineer

metaphor, part 1: reducing tinnitus noises individually

When asked about the sound engineer and mixing desk metaphor, the test subject explains that the sound engineer has five switches to move. He first reports that one frequency has disappeared, then that the noise is "more compact". The switches for the hearing thresholds at the relevant frequencies are then pushed up. The test subject explains that this changes something, but that he cannot yet maintain the positive effect consistently.

Therapeutic greeting, ecology metaphor, psychoeducation on precision and clarity:

Ideas are offered to the subject's unconscious that aim not to statically maximise acoustic information by minimising the hearing threshold, but to achieve a dynamic balance of varying increases and decreases in the complexity of the auditory information, i.e., precision (through conscious consideration of all auditory information) and clarity (by reducing the information to the essentials). The subject is offered the perspective that both deserve equal appreciation.

Don't-think-about-blue paradox, therapeutic greeting:

The subject's unconscious is offered the opportunity to take the lead in blocking out the noise by causing the conscious mind to forget the noise and possibly stop reproducing the noise experience by checking whether it is still present.

Reservoir metaphor, part 1:

The counsellor and therapist contradicts the subject's presumed idea that it is possible not to hear tinnitus even at an extremely low hearing threshold. He illustrates this with the image of a reservoir, on the banks of which the ruins of the villages that were once flooded will always appear if the water level is lowered far enough. If one does not want to see the ruins, the fill level must be adjusted accordingly.

Suppressing involuntary bodily reactions:

The counsellor and therapist suggests to the subject's unconscious mind that it should block out the noises in the ears in the same way that it already regularly does with the eyelid closure reflex, the swallowing reflex, and intestinal and heart activity.

Sound engineer metaphor, part 3: Raising and lowering the hearing threshold as needed

The test subject is encouraged to view silence not as an inability to find and hear the sound, but as the result of a valuable ability to regulate the hearing threshold according to need, in order to satisfy both the enjoyment of listening and artistic perfection. The aim is for the test subject to experience the involuntary or intentional regulation of their hearing as actively shaping rather than passively enduring, and to welcome both silence (with slightly lower hearing precision) and noise (with higher hearing precision) accordingly.

Anecdote about recovered tinnitus, psychoeducation for hearing threshold reduction:

The counsellor and therapist tells an anecdote about how a demonstrator's tinnitus was brought back and then made to disappear in order to illustrate

that raising and lowering the hearing threshold can be deliberately induced, with the effect that tinnitus sounds appear and disappear, depending on whether precise hearing or clear hearing focused on relevant content is required.

Therapeutic greeting, feedback from the test subject on their hearing experience:

The pastoral counsellor and therapist expresses the expectation that his relaxed experience will have a positive effect on his sleep and that improved sleep will have a positive effect on an even more relaxed experience.

Homework:

The subject is encouraged to imaginatively transform any residual noises into emotions and to externalise the person with these emotions or an ambivalence of emotional expression and emotional control, deciding to return these ambivalences in their imagination to the times from which they originate and leave them there.

Reservoir metaphor, part 2:

The subject is asked to imagine a reservoir again, in which the water discharge is throttled so that the water level rises until all landscape elements symbolising residual noises disappear beneath it. The subject's unconscious is instructed to press an "automatic button" when a satisfactory fill level is reached, which regulates the water discharge so that this water level is constantly restored regardless of the weather. In several stages, the subject increasingly succeeds in reducing the residual tones, represented as protruding peaks, and reducing their number.

The fact that it does not seem possible to eliminate the very last traces of tinnitus could be due to the following reason: once the subjective tinnitus has disappeared, some patients still hear "objective tinnitus", consisting of a hissing noise and possibly high-pitched tones, sometimes in a pulsating form. This phenomenon is based on the sound of blood circulation, especially that of the artery that runs past the eardrum. Since this is an actual sound (like ambient noise), it cannot be suppressed by adjusting the volume, but rather by raising the hearing threshold, through suggestions of subsequent forgetting, indifference or sympathy for this sound. Since Mr K. can lower his hearing threshold extremely far, I suspect that the residual noises he occasionally notices at the limit of perception are due to this phenomenon.

Therapeutic regards, posthypnotic suggestion:

The subject's unconscious is instructed to continue the processes that have begun, even intensifying them, after they are no longer consciously pursued following the treatment.

Transformation from acoustic to visual experience (as a ritual):

The counsellor/therapist "pulls" the residual noises out of the subject's right ear using pantomime until the subject reports that nothing more is coming.

PART 3: MEASUREMENT

12 Scientific methods for data collection

Not only tinnitus therapy, but also tinnitus research is challenged to produce objectifiable results. A recent study summarises the difficulties:

> The lack of established biomarkers and objective outcome parameters complicates clinical research... The loudness of tinnitus can be measured using psychophysical methods such as loudness matching or minimum masking loudness, or through subjective assessment using scales such as visual analogue scales or numerical rating scales. However, psychophysical measurements are unreliable and do not reflect subjective changes. Since subjective assessment of loudness can be influenced by stress, determining the loudness of tinnitus remains complicated... The clinical relevance of score reductions in existing questionnaires and whether they adequately cover all relevant areas of tinnitus impairment are the subject of ongoing discussion."[181]

In order to clearly identify which changes are actually achieved through treatment in this somewhat confusing situation, I use a diverse range of measurement and survey methods. The various surveys can then be correlated with each other, which allows for a better assessment

- the reliability of the measurement results,
- the relevance of possible biomarkers, and
- the correlations between various tinnitus-related data.

Specifically, the following scientific methods were used for data collection:

1. **Neurological changes**:

- Magnetoencephalography (chapters 12.1 / 13.1)

2. **Hearing changes**:

- Auditory discrimination tests (chapters 12.4 / 13.4),
- Psychoacoustic tests (chap. 12.5 / 13.5)
- Subjective volume scaling (chapters 11.6 / 13.6)

3. **Stress-related changes**:

- HRV measurement (12.2 / 13.2)
- Vocal spectrum analysis (chap. 12.3 / 13.3)
- Goebel-Hiller tinnitus questionnaire (chap. 12.7 / 13.7)

The inclusion of magnetoencephalography (MEG) opens up the possibility of correlating hearing-related and stress-related changes with neurological measurements.

---

[181] "The lack of established biomarkers and objective outcome measures complicates clinical research... Tinnitus loudness can be assessed by psychophysical methods such as loudness matching or minimal masking level or by subjective assessment using scales such as visual analogue or numeric rating scales. However, psychophysical measurements have a low reliability, and do not reflect subjective changes. As the subjective assessment of loudness can be affected by distress, the determination of tinnitus loudness remains complicated... The clinical relevance of score reductions of existing questionnaires and whether they adequately cover all relevant domains of tinnitus impairment are the subject of ongoing debate." Kleinjung et al., 2024, p. 414.

on the one hand, and on the other hand, it may contribute to a better understanding of the development and treatment of tinnitus.

I have included vocal spectrum analysis in the portfolio of measurement methods because I assume that there is a connection between the tone of the vocal cord muscles and that of the other muscles, so that changes in the overtone spectrum of the voice can provide indications of the experience of stress or relaxation. It is also conceivable that there are relationships between the overtone spectrum of the voice and the characteristics of hearing, including processing in the brain.

Measuring tinnitus volume using two methods, scaling and psychoacoustic testing, provides an impression of the significance of both types of assessment when they are correlated with each other and with other study data.

12.1 Magnetoencephalography (MEG)

The neurological responses to played tones were measured and compared using MEG a few days (usually 1-7) before and after the therapeutic work.

The auditory evoked fields (AEFs) of the auditory cortex were measured using a 122-planar gradiometer (Neuromag-122 whole-head MEG system). Acoustic stimulation was provided by nine musical and speech sounds characteristic of everyday hearing (piano, guitar, flute, bass clarinet, trumpet, violin, organ, percussion and voice) and five artificial harmonic complex tones [182]. The sounds used were each 500 msec long and had defined rise and fall ramps (duration 10 ms) to avoid clicks. AEFs were calculated retrospectively from the measured magnetic field gradients above the head surface from the unfiltered raw data (frequency range 0.00 (DC)-330 Hz and a sampling rate of 1 kHz). Each of the stimuli was presented 100 times in a pseudorandomised order with interstimulus intervals (pauses) of 400-500 msec between the individual sounds. Averaging across all stimuli ensured sufficiently high noise suppression for robust source modelling as a basis for analysing the temporal course of the auditory evoked fields. The stimuli were presented binaurally via 90 cm long plastic tubes through foam earpieces in the ear canal at medium volume (according to the subjects' subjective assessment within a specified range of 65-80 dB SPL) and connected to small shielded transducers mounted in boxes next to the subject's chair. To monitor alertness, subjects were instructed to listen to the sounds in a relaxed manner and watch a silent film. The measurement lasted 20 minutes. Data analysis was performed using BESA Research 6.0 software (MEGIS Software GmbH, Gräfelfing, Germany). Before averaging, the data were checked using the BESA Research Event-Related Field (ERF) module to exclude artefacts. Signal strength was calculated relative to a 100-ms prestimulus baseline. Each subject's responses were combined into a grand average (approximately 1200 artefact-free epochs) in a time window from 100 ms prestimulus to 400 ms poststimulus.
Based on a spherical head model, spatial-temporal source modelling[183] was performed with a dipole in each hemisphere to calculate the latencies (= time of the respective response peak) and amplitudes of the auditorily evoked P1, N1 and P2 responses[184]. In addition, the transit time differences between the right and left hemispheric responses (the asynchrony) were calculated.

---

[182] See Schneider et al., 2022, 2023.
[183] Scherg, 1989
[184] Schneider et al., 2005, 2023

.

P1 is the first response in the auditory cortex, and is therefore related to automatic, unconscious hearing. N1 is the second response, relevant to attentive hearing (listening). P2 is the third response and stands for contextual hearing involving memory and expectation (hearing, listening).

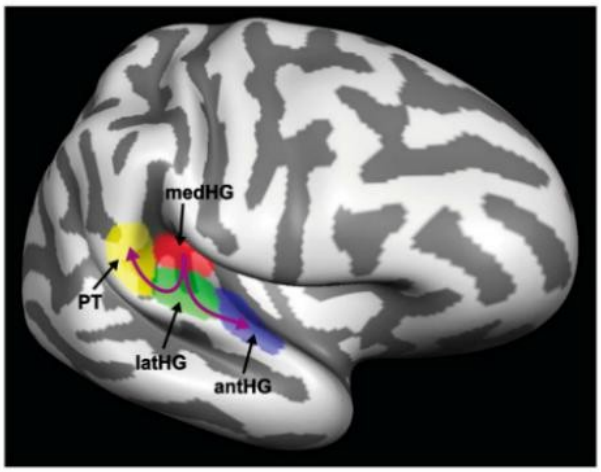


Fig. 3: Position of the auditory cortex in the brain and locations of origin of the P1, N1 and P2 responses

Fig. 3 shows the location of the right auditory cortex (Heschl's gyrus) in the brain. The following can be seen:

- medial Heschl's gyrus (primary auditory cortex) in red – this is where the P1 response originates,
- planum temporale in yellow – where the N1 response originates,
- lateral Heschl's gyrus in green – where the P2 response originates,
- anterior Heschl's gyrus in blue[185] .

Fig. 4 shows the neurological responses (auditory evoked fields, AEFs) to played tones at P1, N1 and P2 in the right and left auditory cortex, respectively, on the day before and after therapy, using the example of Mr K. (see section 11.3). The amplitude of the AEFs on both sides is plotted in nanoamperes (nAm) over time in milliseconds (msec) for the right (red curve) and left (blue curve) auditory cortex. The primary response (P1, automatic, unconscious hearing) remained approximately the same in strength, but the previously existing time difference of 2 msec between the two hemispheres of the brain disappeared; the P1 response is now completely synchronised after therapy. For the N1 response (focused hearing, listening), the transit time difference between the brain hemispheres has shortened from 4 to 3 msec, with the left auditory cortex reacting slightly faster before therapy and the right auditory cortex slightly faster afterwards. This could possibly be seen as a snapshot in a pendulum movement on the way to synchronisation. The P2 response is fully synchronised both before and after therapy.

In the second (N1, focused hearing, listening) and especially the third response (P2, contextual hearing, listening, hearing), the amplitude has increased significantly, which is particularly true for the right hemisphere of the brain. It is characteristic that the right hemisphere reacts more strongly than the left (see the results of the MEG measurements in 13.1). The reasons for this probably lie in the different specialisations of the two hemispheres, in other words, in the way the therapy activates the brain regions. It is known that the right hemisphere of the brain tends to generate predominantly theta waves (frequency range 4-8 Hz), which trigger more unconscious, automatic, creative, intuitive thought processes or even lead to trance experiences, while the left hemisphere of the brain tends to produce beta and gamma waves (frequency range 20-80 Hz), which are associated with logical, structured thinking, pattern recognition processes and consciousness[186]. Hypnosystemic therapy promotes unconscious, automatic processes to a greater extent and may therefore lead to higher (right hemisphere) theta activity.

[185] Benner et al., 2023
[186] Saus et al., 2025.

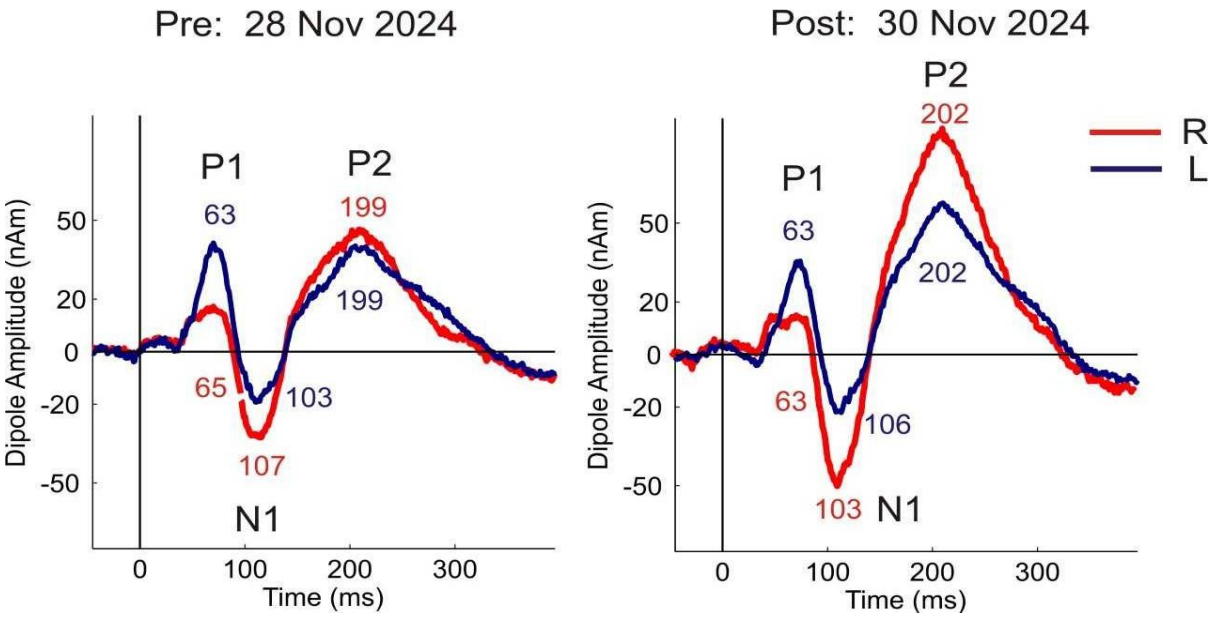


Fig. 4: Mr K.'s neurological responses to recorded sounds.

12.2 Heart rate variability (HRV)

Before and after the therapeutic work, the subjects' heart rate and heart rate variability were measured using an HRV device in order to obtain further information about changes in stress levels.

The examination is based on an electrocardiogram (ECG) recorded via a chest belt with two electrodes at a sampling rate of 1000 Hz. Changes in heart rate provide an initial indication of stress or relaxation in the organism. Further indications can be gleaned from the degree to which the heart rate varies over the course of numerous (520 in our measurement) beat cycles. High variability indicates good adaptability of the nervous system, while low variability indicates difficulties in flexibly adapting tension and relaxation to changing situations, i.e. increased stress. Based on this, a computer analysis evaluates the degree of activity of the sympathetic nervous system (i.e. the provision of nervous activity for stress reactions and physical performance) and the parasympathetic nervous system (i.e. the provision of nervous activity for relaxation and regeneration). The activity of both systems is represented by a histogram. A decrease in the sympathetic value between the pre- and post-measurement indicates a decrease in stress signals in the nervous system. An increase in the parasympathetic value indicates an increase in relaxation signals.

Let's take Mr E. as an example (section 11.3). Over the course of 520 heartbeat cycles, the rhythmogram before therapy, at 12:24 p.m., shows relatively low variability in cycle duration, indicating increased stress. The histogram shows the number of cycles with a specific duration as a percentage. Here, the low variability is shown as a steeply sloping, narrow group of bars. In the scatter plot, the duration of two consecutive beat cycles is compared in milliseconds on the x and y axes. The low variability is shown as an arrangement of the 520 points in a very compact field (Fig. 5).

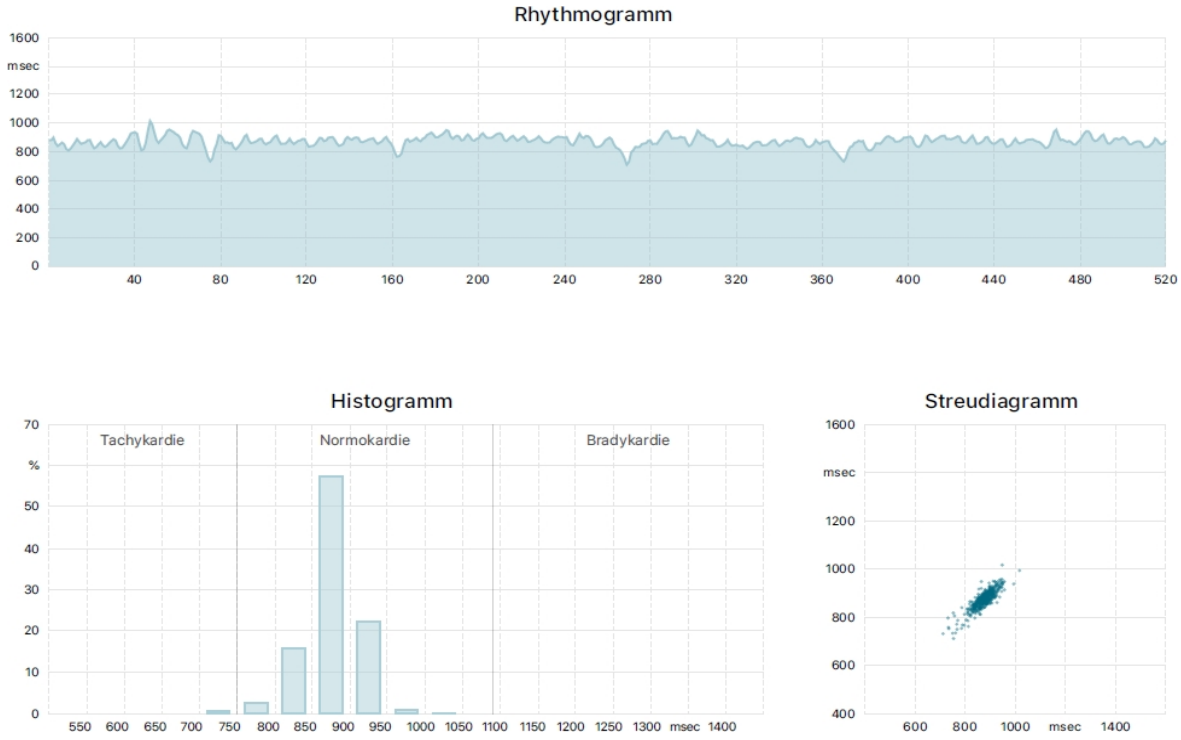


Fig. 5: Heart rate variability in Mr E before treatment

After therapy, at 2:25 p.m., the picture is different. The duration of the heartbeat cycles varies much more significantly, meaning that the heart responds more flexibly to changing demands. Accordingly, the bar field in the histogram is much wider and resembles the shape of a normal distribution curve. The ellipse in the scatter plot is larger, and the points are grouped more loosely, i.e., the differences in the duration of one heartbeat interval (x-axis) compared to the next (y-axis) have become greater (Fig. 6).

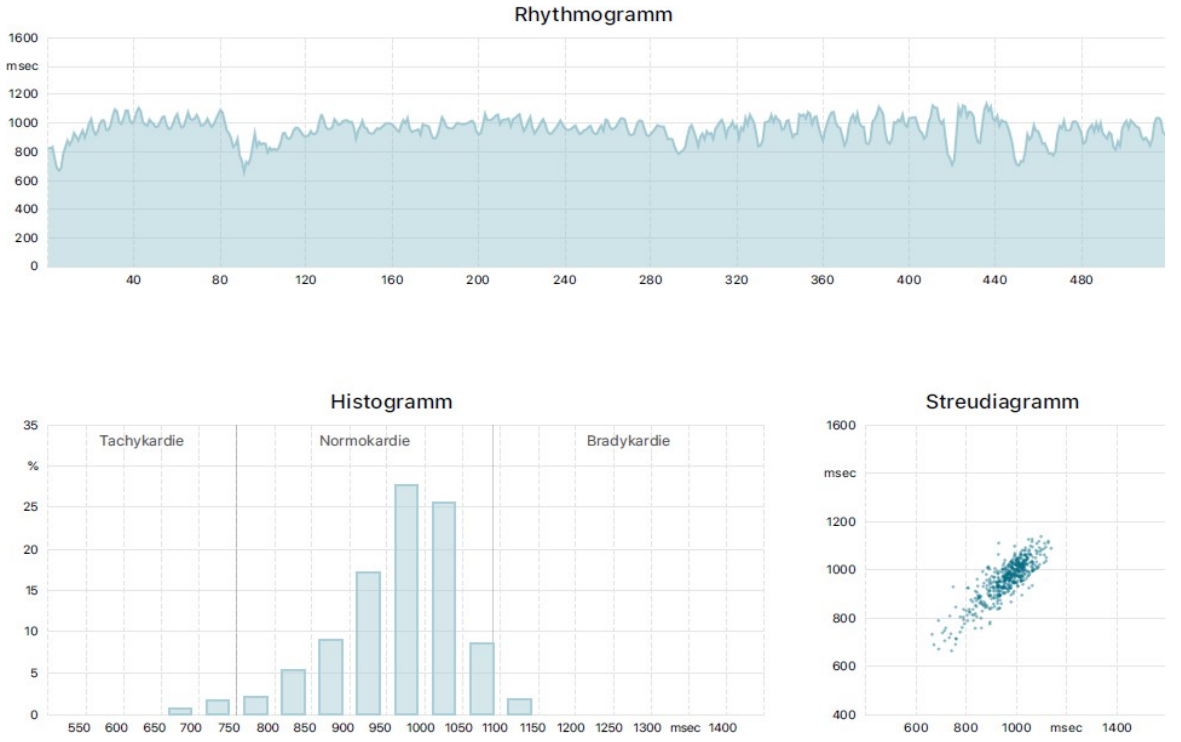


Fig. 6: Heart rate variability in Mr E. after treatment

Mr E.'s heart rate decreased slightly during treatment. The value for sympathetic activity (stress index, SI) fell to one third of the initial value, while the value for parasympathetic activity (RMSSD) more than doubled (Fig. 7).

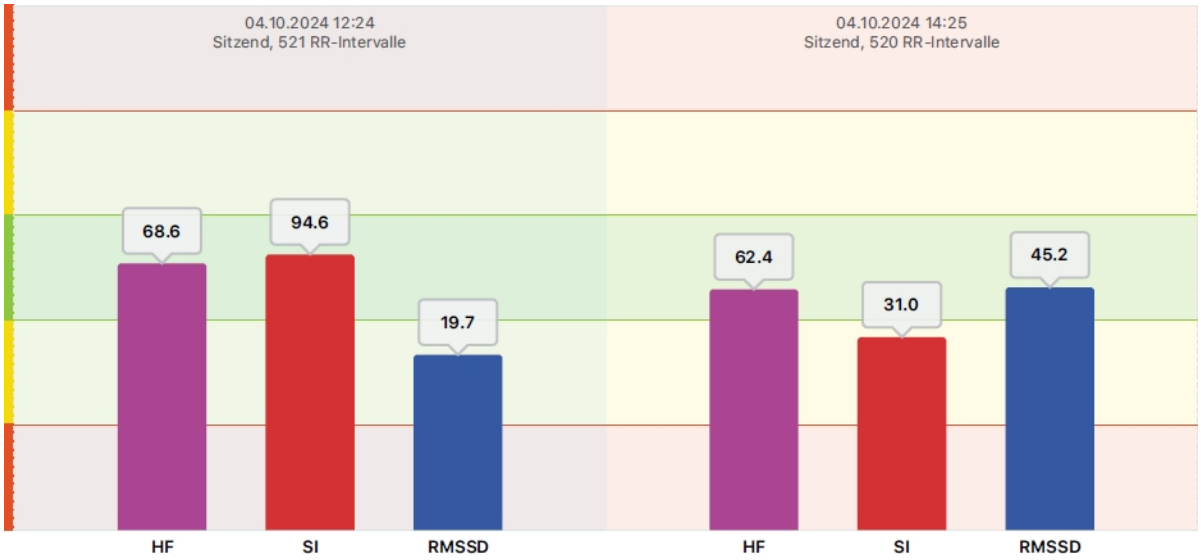


Fig. 7: Heart rate (HR), sympathetic (SI) and parasympathetic (RMSSD) values of Mr E. before and after treatment

12.3 Vocal spectrum analysis

Before and after therapy, subjects are asked to sing the five vowels (A-E-I-O-U) one after the other at a pitch that is comfortable for them, with each vowel lasting approximately 3 seconds. The resonance spectrum of the voice is evaluated.

The mobility of the vocal cords depends on the laryngeal muscles connected to them and is reflected in the spectrum of frequencies produced. The vocal cords are connected to the rest of the muscular system via the laryngeal muscles, so they can be seen as an indicator of changes in the mobility of the entire muscular system.

High tension in the muscles in the head area affects both the regulation of the muscles of the ossicles in the middle ear and, via the audio-vocal loop, the muscles in the vocal tract (see section 8.2). There is a connection between mood, voice and how and what we hear[187].

We suspect that the parameters recorded via heart rate variability (HRV) and the frequency spectrum of the voice can be regarded as indicators of altered muscle tension, so that the individual profile of the frequency spectrum of the voice should also indirectly reflect changes in stress experience.

Fig. 8 shows Mr E.'s vocal spectrum (see section 11.2), above before and below after therapy. In the coloured diagram on the left, the x-axis shows time in seconds and the y-axis shows sound frequencies from 0-20 kHz. This means that the x-axis shows five bars next to each other representing the sounds sung by the test subject

[187] The characteristics of the voice (timbre, volume, frequency spectrum, fluidity) contain an element of resonance with past experiences, as an effect of what has been experienced so far, as well as – through hearing oneself and being heard – a potentially therapeutic or self-therapeutic element, as an influence on the area of expectation (attitude to life). "When singing, one feels one's own body as a sound space. When singing, a resonance occurs, a resonance with the world as sound. Singing articulates a relationship to the world. Singing can break through loneliness and curb fear..." Schroeter-Wittke, 2009b, p. 160, cf. Schroeter-Wittke, 2017a, p. 140f.

Vowels A, E, I, O and U visualised. The intensity of the overtones is shown in different colours, with blue representing low intensity and red representing high intensity. The blue line in the lower section marks the fundamental tone of the voice. The diagram on the right shows the same information in a different way. Here, the frequency in Hz is plotted on the x-axis and the intensity (normalised frequency spectrum in dB, starting from the highest peak with a value of 0 dB) on the y-axis.

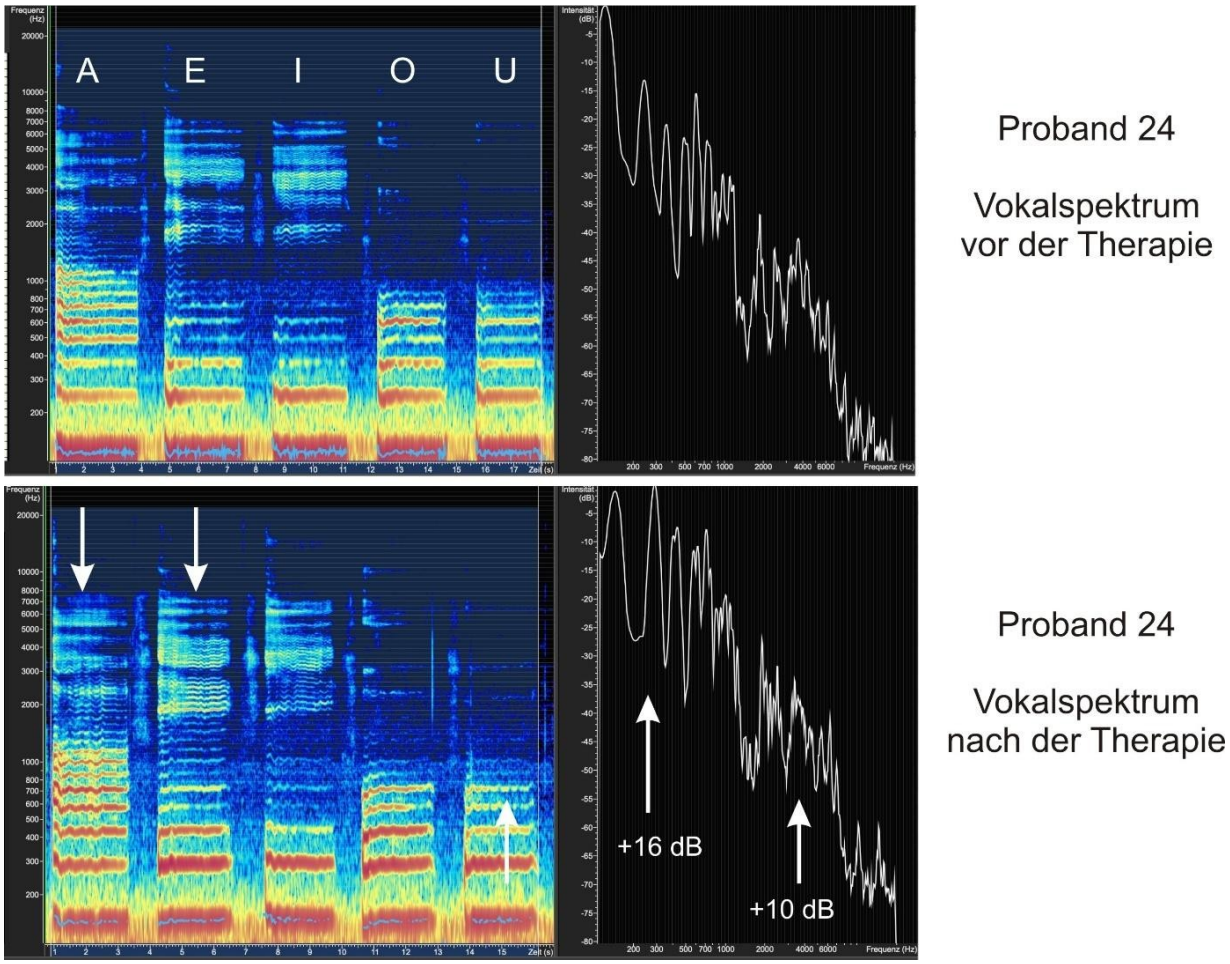


Fig. 8: Vocal spectrum of Mr E. before and after treatment

It can be seen that in the lower diagram on the left, the stripes have become thicker, more numerous and longer, especially for the vowels A and E and particularly in the low and high frequency ranges, i.e. the intensity and number of overtones and the duration of their sound have increased. The diagrams on the right show that after therapy, the voice in the low frequency range at approx. 300 Hz has increased by up to 16 dB and at approx. 3500 Hz by up to 10 dB compared to the fundamental tone. Overall, practically the entire curve from the low to the high frequency range has shifted upwards by 5-20 dB.

12.4 Auditory discrimination tests – Individual sound perception and hearing ability

The KLAWA test[188]measures the ability to distinguish between different volumes and frequencies, as well as the individual perception of fundamental and overtones in complex harmonic sounds. Test subjects are played two consecutive tones through high-quality headphones. The individual discrimination thresholds were measured

[188] Schneider et al., 2022, 2023.

The volume of the sounds played was set to a subjective "medium loud" level. KLAWA is a computer-assisted threshold test based on an adaptive "alternative forced choice" (AFC) procedure[189].

Based on previous experience gained in the 2007 tinnitus pilot project[190], we assume that reducing tinnitus also lowers the hearing threshold, i.e. improves hearing ability in the range of the previous tinnitus frequency. Auditory discrimination tests were carried out for this purpose. These enable statements to be made about individual sound perception and hearing ability via air and bone conduction. Instead of the traditional term "bone conduction", we can also refer to "body conduction". The vibrations of sounds and music are transmitted by soft tissue such as muscles and skin as well as by bones, and in fact to an even greater extent. Muscles that have stiffened as a result of trauma, for example, impede body conduction.[191]

Furthermore, before and after therapy, the same AFC procedure [192]was used to measure the hearing thresholds for air and bone conduction (or body conduction) at 12 different frequencies between 0.1 and 12 kHz in order to determine the subjects' current hearing thresholds, i.e. the physically measurable value at which they can hear sounds.

Fig. 9 shows the hearing thresholds of Ms W. (Section 11.1) before and after therapy. It can be seen that her air conduction hearing thresholds have improved, especially in the frequency range below 3 kHz. In the left ear, the range of excellent hearing has also expanded into the higher frequency range up to 8 kHz.

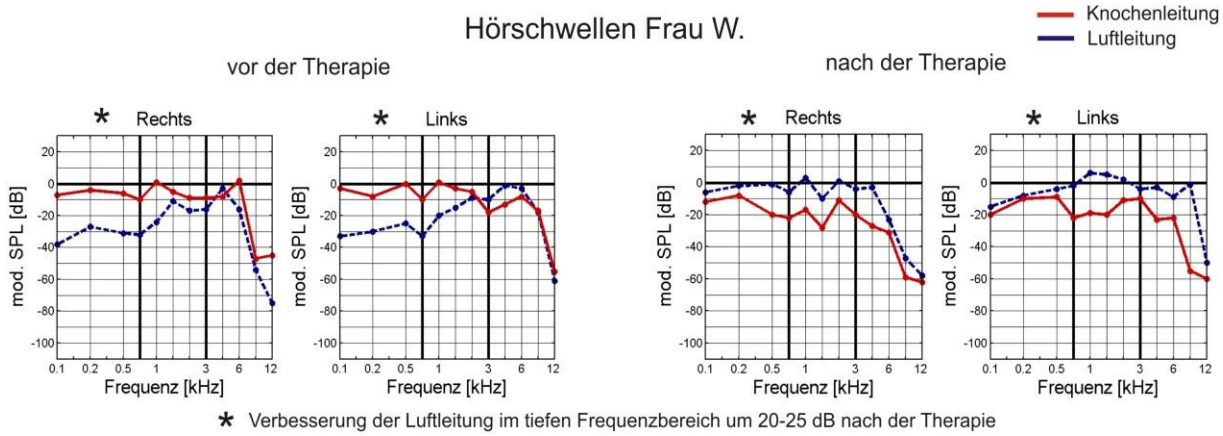


Fig. 9: Air conduction hearing thresholds of Ms W. before and after treatment

It is typical for the bone conduction hearing threshold to move in the opposite direction to the air conduction hearing threshold. When hearing improves, the air conduction and bone conduction hearing thresholds move in opposite directions and tend to converge.

---

189 Schneider et al., 2022, 2023, 2005.
190 See above, Chapter 4.
191 "Music gets under the skin, which is the most important organ of this acoustic massage. This is because the acoustic vibrations not only penetrate the skin, they also cause it to resonate"; "Listening to music turns the skin into a membrane. This is how people become persons through whom something resonates: per-sonare" Schröter-Wittke, 2009b, p.
150. From a therapeutic point of view, the aim is to transform the body, the psyche, the tissue, the voice and the hearing from a rigid state into flexible states of physical and emotional resonance, of harmonious voice, of feeling and hearing, without being overwhelmed by pain or noise (tinnitus, hyperacusis, misophonia).
192 Schneider et al., 2009.

12.5 Objective loudness and frequency of tinnitus

Most subjects (estimated at around 90%) have tonal tinnitus. In order to estimate the pitch and volume of the noise in their ears, they are played comparative tones of different frequencies before and after therapy and asked to indicate whether the tone sounds higher or lower.

This allows the tinnitus frequency heard before and after therapy to be determined objectively with an accuracy of usually less than 1 semitone (depending on the individual's ability to discriminate between pitches).

In a second step, the volume of the comparative tones played is varied at the determined tinnitus frequency until it corresponds to the volume of the tinnitus tone or noise heard. This allows the noise intensity to be determined before and after therapy with an accuracy of usually less than 1 dB (depending on the individual's ability to discriminate volume).

12.6 Subjective scaling of noise intensity

Immediately before and after therapy, the test subjects are asked to rate the subjectively experienced volume on a scale of 1-10: "How loud or quiet is it in your ears on a scale of 0 (silent) to 10 (extremely loud)?"

We suspect that the stress experienced correlates quite well with the subjective volume, which does not mean that the stress experienced follows the volume experienced or that the volume experienced is determined by the stress experienced – or whether, in circular causality, both are the case. It is possible that sounds are perceived as louder when test subjects feel more stressed, regardless of the reason.

According to our observations, reducing the psychoacoustically measured loudness often lowers the hearing threshold, so that, paradoxically, quieter sounds can also be perceived as equally loud or louder than before. It is possible that they nevertheless cause less stress because the organism reacts to the reduction in noise level.

12.7 Tinnitus questionnaire (TF)

The tinnitus questionnaire according to Goebel and Hiller was presented to the test subjects a few days before and after the therapy. The Goebel-Hiller Tinnitus Questionnaire [193]is a psychometric instrument developed to assess the burden of tinnitus. It analyses various aspects of the impact of tinnitus on the lives of those affected. The aim is to record the subjective burden on those affected as a basis for therapeutic decisions.

The questionnaire is divided into the following factors:

1. Emotional distress: The questionnaire measures the psychological and emotional effects of tinnitus, such as anxiety, depression, anger or frustration. (Example: How much does tinnitus affect your general well-being?)
2. Cognitive impairment: The questionnaire examines impairments in concentration, memory problems and the ability to focus on tasks. (Example: How much does tinnitus distract you from everyday activities?)

[193] Goebel & Hiller, 1998.

3. Intrusiveness: The questionnaire assesses the extent to which tinnitus intrudes into your life and interferes with everyday activities. (Example: How often do you find tinnitus disturbing?)
4. Sleep disturbances: The questionnaire assesses the extent to which tinnitus causes sleep problems, such as difficulty falling asleep and staying asleep. (Example: Does tinnitus interfere with your sleep?)
5. Impairment of social life: The questionnaire analyses whether and how tinnitus restricts social life, relationships or leisure activities. (Example: Does tinnitus lead to social withdrawal?)
6. Somatic complaints: The questionnaire examines physical complaints associated with tinnitus, such as headaches or tension. (Example: Are there any physical symptoms that are exacerbated by tinnitus?)

13 Test results

This chapter presents the results of the individual surveys.

13.1 Magnetoencephalography (MEG)

The first three components of the auditory evoked fields of the right and left auditory cortex were evaluated. P1 is the first ("primary") response in the auditory cortex. P1 is therefore a cortical representation of automatic, unconscious hearing. N1 is the second ("secondary") response, which is relevant for focused, attentive hearing (listening). P2 is the third ("tertiary") response in the context of contextual hearing (hearing, listening) in connection with auditory memories and auditory expectations.

Fig. 10: MEG measurement: Shielded measurement cabin in the biomagnetism section of the Neurological Clinic in Heidelberg and test person during measurement (image source: Peter Schneider)

When comparing the curves before and after therapy, there are two measures:

- Synchronisation (time difference between the peaks of the respective components in the right and left auditory cortex) in milliseconds (msec) after the start of the respective tones played,
- The amplitudes of the P1, N1 and P2 responses in the right and left auditory cortex in nanoamperes (nAm).

Improved hearing is indicated by greater synchronisation, i.e. a smaller time difference between processing in the two hemispheres of the brain, and by stronger amplitudes of the responses in the right and left auditory cortex.

For the P1 response, the latency difference between the brain hemispheres before therapy is 7.5 (±1.2) on average, and after therapy 2.4 (±0.6) msec (p< 0.0001), i.e. a reduction in the latency difference of 5.1 msec or 68%. Such increased synchronisation was observed in 96% (26/27) of the test subjects.

The amplitude of the right P1 response was 17.6 (±2.3) before and 21.6 (±2.7) nAm (p=0.001) after, an increase of 4.0 nAm. The amplitude of the left P1 response was 20.9 (±2.2) before and
23.6 (±1.9) nAm (p<0.01), an increase of 2.7 nAm. The amplitude of both the left and right P1 responses increased in 70% of subjects (19/27).

For the N1 response, the average difference in latency between the two hemispheres of the brain was 8.1 (±1.8) milliseconds before therapy and 6.7 (±1.4) milliseconds after therapy (p=0.12, n.s), representing a reduction in latency of 1.4 milliseconds or 17%. Such increased synchronisation is evident in 53% (14/27) of the test subjects.

The amplitude of the right N1 response was 26.7 (±4.4) before and 35.4 (±4.3) nAm (p<0.001) after, an increase of 8.7 nAm. Here, 85% (23/27) showed an increased amplitude. The amplitude of the left N1 response is 20.9 (±2.2) before treatment and 23.6 (±1.9) nAm (p<0.01) after treatment, an increase of 4.7 nAm. Here, 82% (22/27) of subjects show an increased amplitude.

For the P2 response, the average time difference between the brain hemispheres before therapy is 13.0 (±2.1) and after therapy 8.3 (±1.8) msec (p<0.01), i.e. a reduction in the time difference of 4.6 msec or 36%. Such increased synchronisation was observed in 74% (20/27) of the test subjects.

The amplitude of the right P2 response was 18.1 (±3.2) before and 28.5 (±3.9) nAm (p=0.0001) after, an increase of 9.2 nAm or 48%. An increased amplitude was observed in 89% (24/27) of the subjects. The amplitude of the left P2 response is 21.6 (±3.4) before and
28.2 (±3.3) nAm (p<0.01), i.e. an increase of 5.7 nAm or 20%. Here, 78% (21/27) of the test subjects show an increased amplitude.

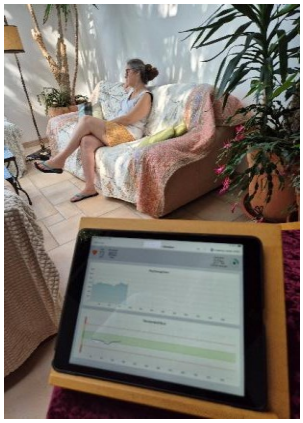
The individuals who showed an increase (or reduction) in the amplitude of the P1, N1 or P2 response on the right were generally the same as those who showed the same pattern on the left. The results at a glance:

Response	P1 Pre Post Significance	N1 pre post Significance	P2 pre post Significance
Runtime difference / synchronisation (msec)	7.5 (±1.2)	8.1 (±1.8)	13.0 (±2.1)
	2.4 (±0.6)	6.7 (±1.4)	8.3 (±1.8)
	p< 0.0001	p=0.12, n.s.	p<0.01
Amplitude R (nAm)	17.6 (±2.3)	26.7 (±4.4)	18.1 (±3.2)
	21.6 (±2.7)	35.4 (±4.3)	28.5 (±3.9)
	p=0.001	p<0.0001	p=0.0001
Amplitude L (nAm)	20.9 (±2.2)	22.5 (±2.9)	21.6 (±3.4)
	23.6 (±1.9)	27.5 (±2.9)	28.2 (±3.3)
	p=0.01	p<0.01	p<0.01

For all three responses P1, N1 and P2, right-left synchronisation and amplitudes increased on both sides. Expressed in terms of subject numbers, the amplitude increased as a result of therapy at the point...

- P1 on the left in 19/27 and on the right in 19/27 subjects,
- N1 on the left in 21/27 and on the right in 24/27 subjects, and
- P2 on the left in 24/27 and on the right in 25/27 subjects.

13.2 Heart rate variability (HRV)



The average heart rate (HR) of the test subjects before the start of therapy was 65.1 ± 1.7 beats per minute (bpm). Two hours later, the follow-up measurement showed a value of 61.0 ± 1.5 bpm ($p<0.001$, two-sided t-test, paired sample).

The value representing sympathetic activity (stress index, SI, index value without unit of measurement) averaged
101.9 ± 16.4. In the follow-up measurement, it was 32.3 index points lower at 71.0 ± 10.0 ($p<0.01$).

The value representing parasympathetic activity (root mean square of successive differences, RMSSD, indicating the average change in the time interval from one heartbeat to the next in
milliseconds) indicates the short-term regenerative capacity of cardiac activity after challenges. The parasympathetic nervous system generally reacts more slowly to external changes than the sympathetic nervous system. The RMSSD value averaged 32.8 ± 5.9 msec before the therapy session and 33.0 ± 3.0 msec afterwards ($p=0.48$, n.s.), i.e. a slight, insignificant improvement.

Fig. 12: Vocal spectrum analysis

13.3 Vocal spectrum analysis

In order to express the changes in the voice in numbers, we divided the frequency spectrum of the 5 vowels that the test subjects sang at a pitch that was comfortable for them into 8 equidistant [194]frequency bands. We then averaged the decibel value of each frequency band relative to the intensity of the fundamental tone for all vowels.

By comparing the results before and after therapy, we can represent the change in voice volume as an average loudness
[illegible]s.
The selected frequency bands are: <0.3 kHz, 0.3 - 0.5 kHz, 0.5 - 0.9 kHz, 0.9 - 1.7 kHz, 1.7 - 3.0 kHz, 3.0 - 5.3 kHz, 5.3 - 8.0 kHz and >8.0 kHz.

The fundamental tone of the voice lies in the first frequency band (<0.29 kHz) for all test subjects (both men and women). For the sake of comparability, we have normalised this value to zero in each case.

[194] On a logarithmic basis, up to the 7th frequency band, a minor seventh in each case, and a minor sixth in the 8th.

The relative strength of the overtones of the voice compared to the fundamental tone increased significantly on average across all test subjects in each of the frequency ranges:

Frequency range (kHz)	Intensity before (dB)	Intensity after (dB)	Difference (dB)	Significance
0.3 - 0.5	-4.3 (±1.2)	-1.3 (±1.2)	3.0 (±1.0)	p<0.01
0.5 - 0.9	-12.7 (±1.3)	-8.9 (±1.3)	3.8 (±1.0)	p<0.01
0.9 - 1.7	-22.5 (±1.4)	-18.9 (±1.2)	3.7 (±1.1)	p<0.01
1.7 – 3.0	-28.8 (±1.3)	-25.6 (±1.5)	3.2 (±1.0)	p=0.05
3.0 - 5.3	-38.6 (1.6)	-31.5 (±1.2)	7.1 (±1.0)	p<0.0001
5.3 - 8.0	-51.7 (±1.1)	- 44.7 (±1.2)	7.0 (±1.0)	p<0.0001
>8.0	- 58.3 (±1.1)	- 52.5 (±1.1)	5.8 (±1.1)	p<0.001

It should be noted that the amplitudes in the frequency spectrum of the voice in the low and mid ranges increase by approximately 3 dB on average across all 27 test subjects after therapy, and in the high frequency range from approximately 3 kHz (characteristic formant range in speech as well as in singing) by as much as twice that amount, approximately 6 dB, i.e. the high frequency components increase proportionally more, which is reflected in greater brilliance, richness and clarity of the voice.

The change in the overtones of the voice is significant both in terms of stress experience and in terms of auditory characteristics.

- With regard to stress experience:

The resonance of the overtones of the voice is equivalent to the vibratory capacity of the vocal cords, which are connected to the elasticity of the entire musculature and the whole body mass. It is well known that the muscles contract under stress and relax when experiencing security and well-being. Therefore, the tone spectrum of the voice probably also reflects the build-up and reduction of stress.

- With regard to auditory characteristics:

The vibrational capacity of body mass (including bodily fluids) is also the measure of structure-borne sound (often imprecisely referred to as "bone conduction"). This refers to the resonance of sound waves in the body, including the hair cells in the inner ear (as opposed to air conduction in the ear canal). Therefore, the sound spectrum of the voice also reflects the degree to which the body is in resonance. Relaxed muscles result in stronger body resonance, which also means more differentiated information for the cochlea and auditory cortex.

13.4 Individual sound perception and auditory discrimination tests

These tests determined how the subjects' ability to distinguish between the volumes and pitches of various tones played to them developed over the course of the therapy.

13.4.1 Volume

Fig. 13: Auditory discrimination test

The subjects' ability to distinguish between two tones of different loudness was previously at a loudness difference threshold of 1.1 (±0.2) on average, and afterwards at 0.5 (±0.1) dB, i.e. the ability to distinguish between loudness levels improved by 0.6 dB (p<0.001). Since the decibel scale is logarithmic, not linear, this corresponds to an improvement of 13%. The value improved at 20
of 27 test subjects; for one, it remained the same.

13.4.2 Frequency

The subjects' ability to distinguish between the frequencies of two different tones was previously at an average frequency difference threshold of 27.0 (±3.6) and afterwards at 16.3 (±2.3) cents (1 cent = one hundredth of a semitone), i.e., the ability to distinguish frequencies improved by 10.7 cents (p<0.0001). This corresponds to an improvement of 40%. In other words, whereas the test subjects were previously able to recognise a frequency difference of just under a quarter of a semitone on average, after the treatment they were able to identify a sixth of a semitone. The value improved in 23 of 27 test subjects.

13.4.3 Air and bone conduction hearing thresholds

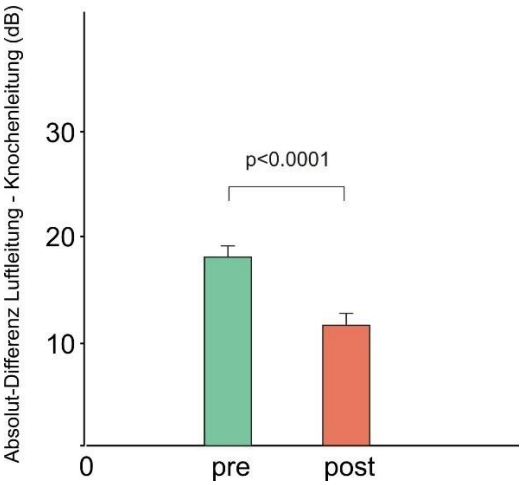
Fig. 14: Hearing threshold test

The air conduction hearing threshold improved in the range of the respective dominant tinnitus frequency from an average of -39.1 ± 4.3 to -28.5 ± 4.3 dB SPL. This means that the hearing ability of the test subjects increased by an average of 10.6 ± 1.3 dB (p<0.001) in this range.

Outside the tinnitus frequency, the hearing threshold improved on average among the test subjects (averaged across the frequency ranges without tinnitus) improved from -15.2 ± 2.7 to -10.2 ± 2.1 dB on average. This means that the hearing ability of the test subjects increased by an average of 5.0 ± 1.1 dB (p<0.01) in the range non-tinnitus frequencies by an average of 5.0 ± 1.1 dB (p<0.01).

The air conduction hearing threshold improved in 26 of 27 test subjects in the tinnitus frequency range, while it decreased slightly (3 dB) in one subject. In the non-tinnitus frequency ranges, the air conduction hearing threshold improved in 25 of 27 subjects, while in two it decreased slightly (1 and 3 dB, respectively).

As already mentioned, it is characteristic that the bone conduction hearing threshold moves in the opposite direction. The further apart the hearing thresholds for bone and air conduction are, the more likely it is that frequency-specific noise hypersensitivity (hyperacusis) will be observed



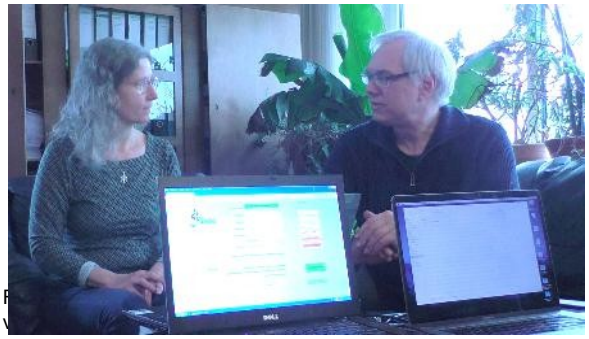
conduction hearing thresholds before and after therapy

[195] . In the test subjects in this study, too, the bone conduction hearing threshold generally developed in the opposite direction to the air conduction threshold during the course of therapy: where the air conduction hearing threshold decreased, the bone conduction hearing threshold often increased, with the result that the difference between the two decreased[196] .

The difference between the air conduction and bone conduction hearing thresholds decreased significantly during the course of therapy (p<0.0001). Apparently, the air conduction and bone conduction hearing thresholds strive to achieve a favourable balance by converging towards each other.

[195] Peter Schneider, Manual for Aulos Hearing Training, unpublished.
[196] See section 12.4, Fig. 9.

13.5 Objective loudness, relative loudness and frequency of tinnitus



The absolute tinnitus loudness (i.e. the loudness compared to external noise) decreased in 25 of 27 subjects. In one subject it remained the same, and in another it increased. The average initial loudness was -62.7 ± 4.5 dB below full scale (FS / maximum volume of the device used), and the average final volume was -74.9 ± 4.4 dB. This results in an average noise reduction of 12.1 dB ($p<0.0001$).

By comparing the absolute tinnitus volume with the hearing threshold, the relative tinnitus volume can be calculated, i.e. the decibel value by which the ear noise exceeds the hearing threshold for the frequency in question.

In 24 of the 27 test subjects, the relative volume decreased, while in 3 it remained the same. The average initial volume was 9.0 above the hearing threshold ± 0.7 dB, and the average final volume was 4.9 ± 0.6 dB. On average, the relative volume was reduced by 4.0 ± 0.6 dB ($p<0.0001$).

The dominant tinnitus frequency changed in 19 of 27 subjects (in 17 of them from higher tones to lower ones), while it remained the same in 8 subjects. The average absolute frequency change was 1.0 ± 0.2 Hz ($p<0.001$).

13.6 Subjective scaling of noise intensity

When self-assessing tinnitus volume on a scale from 0 (silent) to 10 (maximum loudness), noise intensity decreased in all 27 individuals. The average scale value before therapy was 4.7 ± 0.4, and after therapy it was 2.9 ± 0.4 ($p<0.0001$). The noise intensity thus decreased by an average of 1.8 points on the scale. Three individuals rated their tinnitus as 0 after therapy, meaning it was no longer present, and two others rated it as 0.5.

The results of the subjectively scaled tinnitus loudness correlate highly significantly with those of the relative tinnitus loudness **(**pre: $r=0.51$, $p<0.01$, post: $r=0.74$, $p<0.0001$)[197]. The improvement in correlation also shows that the subjects' ability to accurately assess the volume of the tinnitus has more than doubled on average (factor 2.1).

Some individual observations are interesting: the three people whose relative tinnitus volume showed no change all reported a reduction in volume when asked to rate it on a scale. One of these people – the only test subject – experienced an increase in the measured *absolute* tinnitus volume during the course of therapy, which was compensated for by an increase in the hearing threshold.
It is possible that stress reduction, independent of the absolute and relative tinnitus volume, contributes to the improved subjective volume value (reverse recruitment effect as a factor of resilience).

[197] See the graph in section 14.2.1.1, Fig. 16.

13.7 Tinnitus questionnaire

In the tinnitus questionnaire for assessing stress levels, the average total score before therapy was 21.1 ± 2.8 points and after therapy 14.3 ± 2.3 points. This represents a reduction in stress of 6.8 points ($p<0.0001$). The total score for stress caused by tinnitus improved in every single test subject (with the exception of one test subject whose score was already 0 before therapy, from which point no further improvement was necessary or possible).

Positive changes tended to occur in the average values for all aspects of tinnitus-related stress:

Type of stress	Mean value (± SD) before	Mean value (± SD) after	Significance
Emotional	5.6 (± 0.8)	3.7 (± 0.8)	$p<0.0001$
Cognitive	3.2 (± 0.6)	2.3 (± 0.5)	$p<0.001$
Penetrance	6.3 (± 0.8)	4.1 (± 0.7)	$p<0.0001$
Hearing problems	4.2 (± 0.7)	2.9 (± 0.5)	$p<0.0001$
Sleep disturbances	1.1 (± 0.3)	0.7 (± 0.2)	$p<0.01$
Somatic	0.8 (± 0.2)	0.6 (± 0.2)	$p<0.05$

14 Discussion

In this chapter, I would first like to summarise the most important results of the measurements and surveys, then discuss correlations and possible connections between the various measurement results, between test subject characteristics and measurement results, and between the course of treatment and the measured results, in order to finally classify the significance of the neurological, hearing-related and stress-related results from my point of view.

14.1 An overview of the most important test results

As part of the study, 27 subjects with chronic tinnitus underwent a 90-minute hypnosystemic consultation session. The measurements and surveys conducted before and after the session revealed the following:

Neurological changes

96% of the subjects (26/27) showed improved synchronisation of the right and left hemispheres of the brain in the area of primary, unconscious hearing (response P1). The transit time difference (delay between the responses of the two hemispheres) was reduced by an average of 68% ($p<0.0001$).

70% of the test subjects (19/27) showed an increased amplitude of the P1 response on the right and left sides. The increase averaged 20% on the right ($p=0.001$) and 12% on the left ($p<0.01$).

85% of the subjects (23/27) showed an increased amplitude of the N1 response on the right side in the area of focused, attentive listening (response N1), 82% (22/27) on the left side. The increase averaged 26% on the right ($p<0.001$) and 21% on the left ($p<0.01$).

74% of the test subjects (20/27) showed improved synchronisation of the right and left hemispheres of the brain in the area of experience-related, contextual listening (response P2). The transit time difference was reduced by an average of 36% ($p<0.01$).

89% of subjects (24/27) showed increased amplitude of the P2 response on the right side, 78% (21/27) on the left side. The increase averaged 48% on the right ($p=0.0001$) and 20% on the left ($p<0.01$).

Improvement in hearing characteristics:

11% of subjects (3/27) experienced a complete resolution of the noises.

89% of the test subjects (24/27) experienced a psychoacoustically measurable reduction in relative loudness (which is decisive for conscious hearing). The average loudness was reduced by 4.1 dB ($p<0.0001$) or 38%.

According to their subjective feedback, 100% of the test subjects (27/27) experienced a reduction in noise (scaling question). The average improvement according to this survey was also 38% (1.8 scale points). – Remarkably, the results of the subjectively scaled tinnitus loudness correlate highly significantly with those of the psychoacoustically measured relative loudness (in the follow-up measurement $p<0.0001$).

96% of the test subjects (26/27) experienced an improvement in the air conduction hearing threshold in the tinnitus frequency range. The hearing ability of the test subjects increased by an average of 10.5 dB ($p<0.05$).

74% of the test subjects (20/27) improved their ability to distinguish differences in volume in the tones played. The improvement in discrimination ability averaged 13%.

85% of the test subjects (23/27) improved their ability to distinguish frequency differences in the tones played. The improvement in discrimination ability averaged 40%.

The subjects' ability to assess the volume of their tinnitus more than doubled on average (factor 2.1).

Stress reduction:

100% of the test subjects (26/26) experienced an improvement in stress levels (tinnitus questionnaire according to Goebel and Hiller). On average, stress levels were reduced by 32% compared to the initial value ($p<0.0001$).

93% of the test subjects (25/27) increased their relative voice volume in the range of 5.3 - 8.0 kHz. The average increase in voice volume was 6.7 dB ($p<0.0001$). 89% of the test subjects (24/27) increased their relative voice volume in the range 3.0 - 5.3 kHz. The average increase in voice volume was 6.8 dB ($p<0.0001$). In the other frequency ranges, the effect was less pronounced but still measurable.

67% of the test subjects (18/27) showed reduced sympathetic activity in the HRV measurement after therapy. On average, the stress index value decreased by 31% ($p<0.01$) across all test subjects.

14.2 Possible correlations

This chapter deals with correlations that have been found between the parameters surveyed and measured in the study and with connections that can be derived or assumed from them.

The fact that we are taking a closer look at the network of correlations, taking into account their possible interdependence, i.e. their mutual and circular influence, is also related to

the author's (hypno-)systemic background. I see physical processes as an expression of an inner balance between the various bodily functions, which involuntarily strive for equilibrium, for a state of low energy and resource loss and the widest possible range of choices.

14.2.1 Relationships between different measurement results

Let us first consider some correlations between the different measurement results. Almost all of the

correlations found here have one thing in common: the values of the
follow-up measurements almost always correlate to a higher degree than those of the preliminary measurements. This often results in significantly higher significance values for the follow-up measurements than for the preliminary measurements. In most cases where significant correlations were found in the follow-up measurement, no significant correlation was found in the preliminary measurement.

One exception is the correlations between tinnitus volume or hearing thresholds and the P1 amplitude. Here, I suspect that the correlation strength and significance decrease because the values in the follow-up measurement are too close to zero and therefore too similar to each other to provide meaningful results[198]. Another exception is the correlation between voice intensity in the formant range and parasympathetic activity. Here, the correlation is slightly stronger after therapy than before.

What does this usually very clear change in correlation strength and significance in the course of treatment mean?

Apparently, the relationship between the various bodily functions in relation to each other is comparatively disorganised and chaotic before therapy, whereas afterwards the bodily functions are in a meaningful balance with each other, falling within a range of standard values that is valid beyond the individual[199]. The "healthy" state therefore differs from the "unhealthy" state perhaps not so much in whether certain values are high or low in themselves, but above all in the relationship between the values of different bodily functions.

From this point, one could consider whether the difference between the magnitude of the correlation before and after therapy can be a measure of the improvement in health (i.e. for the gain in resources in the form of an initial reorganisation of the balances of bodily functions). If we understand the interaction of bodily functions as a network of interrelated control loops, then health would be the state in which these are in such a relationship to each other that they function efficiently and provide the system with a flexible selection of learning and action options.

In the scientific approach, I would now like to treat low correlations (insignificant relationships) in the pre-measurements not as informative waste, but, in contrast to the correlations of the post-measurements, as an expression of the change from a weak, comparatively ineffective to a higher, comparatively more effective degree of organisation in the interaction of bodily functions.

---

[198] For more details, see 14.2.1.2.

[199] "All therapy is based on two assumptions: 1. All people are the same. 2. All people are different. Because all people are the same, we can communicate. Because all people are different, we must communicate." (Hammel, 2022, p. 13.) The fact that the data from 27 test subjects correlate with each other, as well as the fact that this data moves towards a higher degree of correlation (and often only becomes detectable in the first place) in the course of an improvement in health, refers to assumption 1, which, however, does not invalidate assumption 2.

Here is an overview of the changes in correlations between the pre- and post-measurements:

Correlation Measurement A vs. measurement B (see chapter no.)	**Pre-measurement** Correlation coefficient Significance	**Difference** Change in correlation strength	**Post-measurement** Correlation coefficient Significance
Scaled vs. measured Tinnitus loudness (14.2.1.1)	r=0.51 p<0.01	0.23 (<)	r=0.74 p<0.0001
Scaled tinnitus loudness vs. P1 amplitude (14.2.1.2)	r=0.40 p<0.05	-0.20 (>)	r=0.20 n.s.
Scaled tinnitus volume vs. *change* in P1 amplitude (14.2.1.2)	r=0.41 p<0.05	-0.04 (>)	r=0.37 p<0.05
Change in relative tinnitus volume vs. change in P1 amplitude (14.2.1.2)	r=0.18 n.s.	0.16 (<)	r=0.34 p<0.05
Right-left difference in P1 amplitude vs. hearing thresholds (14.2.1.3)	r=-0.43 p=0.02	-0.13 (>)	r=-0.56 p=0.002
Hearing threshold on the tinnitus frequency vs. P1 amplitude on the right (14.2.1.4)	r=-0.12 n.s.	0.44 (<)	r=0.32 p=0.08
Hearing threshold outside the tinnitus frequency vs. P1 amplitude on the left (14.2.1.4)	r=0.33 p<0.05.	0.70 (<)	r=-0.37 p<0.05
Increase in voice intensity at 5.3–8.0 kHz vs. change in hearing thresholds at the tinnitus frequency (14.2.1.5)	r=0.21 n.s.	0.09 (<)	r=0.30 p=0.08
Increase in voice intensity above 8.0 kHz vs. change in hearing thresholds on the tinnitus frequency (14.2.1.5)	r=0.17 n.s.	0.51 (<)	r=-0.34 p<0.05
Increase in voice intensity at 3.0–5.3 kHz vs. TF total value (14.2.1.6)	r=-0.54 p<0.01	0.06 (<)	r=-0.60 p<0.01
HRV-RMSSD vs. voice intensity at 3.0-5.3 kHz (14.2.1.7)	r= -0.42 p<0.05	-0.03 (>)	r=-0.39 p<0.05
HRV-SI value vs. heart rate (14.2.1.8)	r=0.32 p<0.05	0.12 (<)	r=0.46 p=0.01
HRV RMSSD value vs. heart rate (14.2.1.8)	r=-0.03 n.s.	0.32 (<)	r=-0.35 p=0.06
HRV-SI value vs. HRV-RMSSD value (14.2.1.9)	r=-0.48 p<0.05	0.12 (<)	r=-0.60 p<0.001
Fundamental or overtone perception vs. hearing thresholds in the non-tinnitus frequency range (14.2.2.5)	r=0.26 p=0.23	0.04 (<)	r=0.30 p=0.07

After the game is before the game: If all test subjects were offered a second session and the correlation between the measurement results listed below were determined again, it would most likely be even higher. This process would possibly be repeated from

each session to the next (possibly at decreasing rates) as long as an improvement in health is achieved.

I suspect that the reorganisation of the relationships between the various bodily functions tends to take place earlier and that the improvement in the individual values of the bodily functions occurs with a time delay in relation to this. This could explain why some test subjects experienced a greater reduction in the volume of their tinnitus during the follow-up measurement a few days after the therapy than was the case immediately after the therapy[200].

It might be possible to use the strength of correlation between different bodily functions as an indicator of therapeutic progress. To do this, it would be necessary to determine the threshold values towards which the correlations found in groups of healthy people tend and to regard these as a constant reference value (setpoint in a control loop) to which the relationship between the compared values in individuals before and after treatment is related.

If it is true that the relationships between different health values are often more meaningful than the individual values taken on their own, then such correlation values could possibly also be used to compare the degree of health of different social groups or test groups with each other.

If such a view proves to be useful, it would probably be significant far beyond the context of tinnitus treatment.

14.2.1.1 Subjectively scaled vs. psychoacoustically measured tinnitus loudness

As mentioned above, the results of the subjectively scaled tinnitus loudness correlate highly significantly with those of the relative tinnitus loudness **(**pre: r=0.51, p<0.01, post: r=0.74, p<0.0001**)**. It is noteworthy that the correlation between the subjectively scaled and psychoacoustically measured relative tinnitus loudness after therapy is more than twice as high as before therapy (Fig. 17). The subjects' ability to accurately assess the loudness of the ear noise doubled on average. This clearly shows that the subjects were able to assess the tinnitus loudness more accurately after therapy due to their improved hearing abilities.

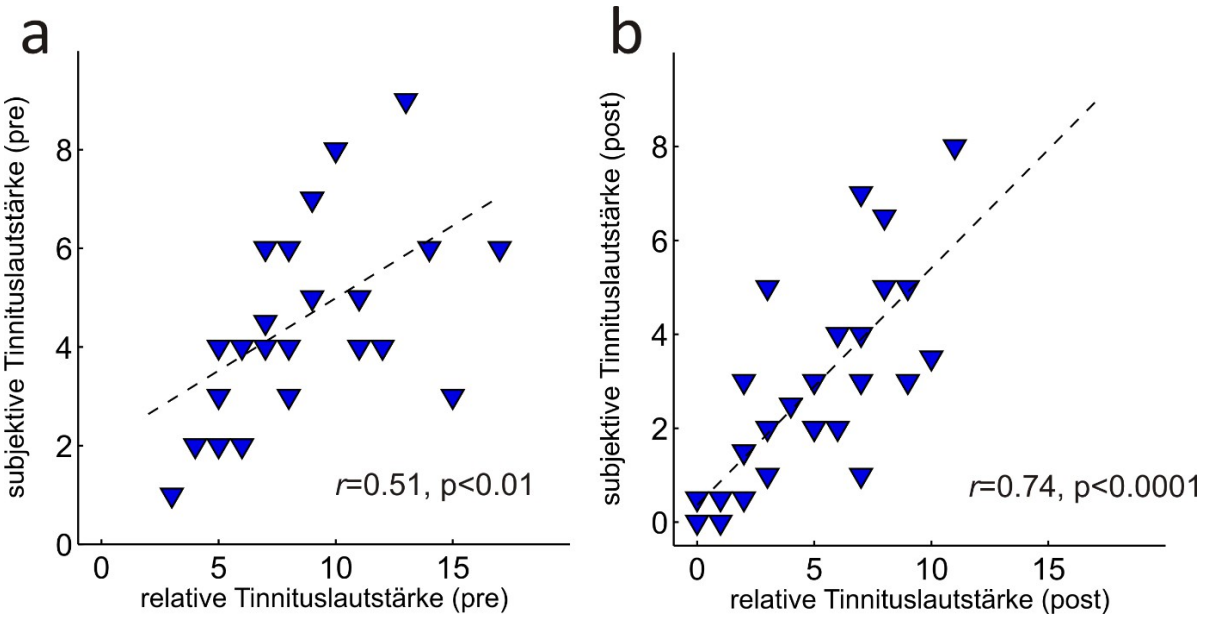


Fig. 17: Correlation between subjectively scaled and psychoacoustic tinnitus volume

[200] See, for example, the measurement results for Ms W.'s perception of noise in section 14.2.3.1.

It should be noted that the subjectively scaled tinnitus volume generally reflects the psychoacoustically measurable volume very well, and that this is even more clearly the case after therapy (i.e. with improved symptoms) than before.

14.2.1.2 P1 synchronisation vs. scaled or relative tinnitus loudness

The synchronicity of the reaction of the right and left hemispheres of the brain at P1 (first, unconscious response in the auditory cortex) correlates with the intensity of the tinnitus volume subjectively rated by the test subjects. This applies above all to the results before therapy (r=0.40, p<0.05). For the results after therapy, the correlation is weaker (r=0.20, n.s.) and would probably require a larger sample size to show significant values. The weakening of the correlation after therapy is due, among other things, to the smaller range of values for the estimated tinnitus volume,
i.e. the numerical values of the results are closer to zero (and this approximation is the rule in the course of therapy). If the values of the pre- and post-measurements are shown in the same diagram (Fig. 18a), it becomes clear that the values of the post-measurement represent, in a sense, an extension of the values of the pre-measurement. Regardless of when the measurement takes place, there is clearly a correlation between P1 and the scaled volume.

If we compare the improvement (or, in one case, deterioration) in synchronisation with the scaled tinnitus loudness before and after treatment, a correlation also emerges: the louder the tinnitus is at the beginning, the greater the change in synchronisation during the course of treatment (Fig. 18b) – perhaps because loud tinnitus means more potential for improvement, and this improvement has then usually occurred. Conversely, the greater the improvement (or, where applicable, deterioration) in synchronisation in our sample of tinnitus sufferers, the quieter (or louder) the tinnitus is subsequently scaled.
deterioration) in synchronisation is greater, the quieter (or louder) the tinnitus is subsequently scaled.

It is noteworthy that such a correlation exists between the synchronisation at P1 and the scaled tinnitus loudness, but not between the P1 synchronisation and the (psychoacoustically measured) relative tinnitus loudness, even though the scaled and measured relative loudness correlate highly significantly with each other.

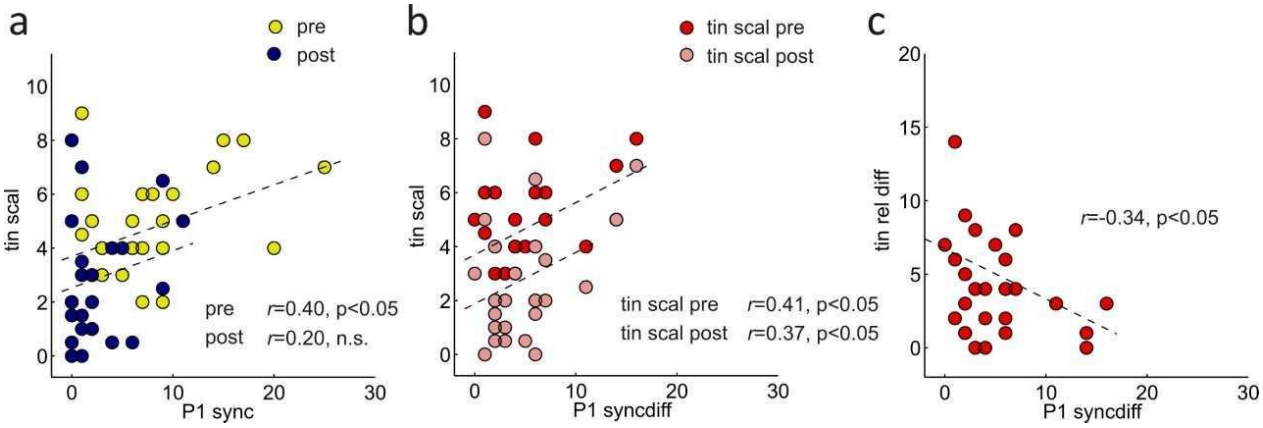


Fig. 18: Correlations between a) scaled tinnitus loudness and P1 synchronisation, b) scaled tinnitus loudness and P1 synchronisation difference pre/post, and c) change in relative tinnitus loudness and change in P1 synchronisation due to therapy

However, a correlation can be found between the change in psychoacoustically measured relative tinnitus loudness and the change in P1 synchronisation (Fig. 18c): The greater the improvement in the measured tinnitus loudness, the greater the reduction in the time difference between the brain hemispheres in relation to the P1 response, and thus the greater the optimisation of right-left synchronisation at P1.

It should be noted that even the very first, unconscious response in the auditory cortex is associated with tinnitus symptoms, i.e. these do not only arise at later stages of auditory processing[201].

14.2.1.3 Right-left difference in P1 amplitude vs. hearing thresholds

There is a strong correlation between the size of the difference between the (primary, unconscious) P1 response on the right and left and the hearing threshold at the tinnitus frequency. A stronger P1 amplitude on the left or a weaker P1 response on the right is beneficial for minor hearing loss.

It is therefore not a question of whether a small or large amplitude difference is generally favourable, but rather that a strong or dominant left P1 response is specifically decisive for good hearing ability. Conversely, a dominant right P1 response statistically indicates weaker hearing ability.

This correlation is already clearly evident before therapy (r= -0.43, p=0.02) and becomes even stronger afterwards (r= 0.56, p=0.002).

In the range outside the tinnitus frequency, the findings are almost identical (before therapy r= 0.44, p=0.02, afterwards r= 0.55, p=0.003).

The more dominant the left P1 response is in comparison to the right, the better the hearing threshold. Test subjects with a strong left P1 response in relation to the right P1 response have better hearing thresholds, i.e. they hear better. This applies both before and after therapy (although even more strongly afterwards) and both at the tinnitus frequency and in the other frequency ranges.

In Fig. 19, the relative difference between the right and left P1 amplitude in nAm is plotted on the y-axis; positive values on the y-axis mean that the P1 amplitude is greater on the right than on the left, and negative values mean that the P1 amplitude is greater on the left than on the right. The hearing thresholds at the tinnitus frequency in dB can be read on the x-axis: 0 dB means no hearing loss, high negative values down to -80 dB mean severe hearing loss.

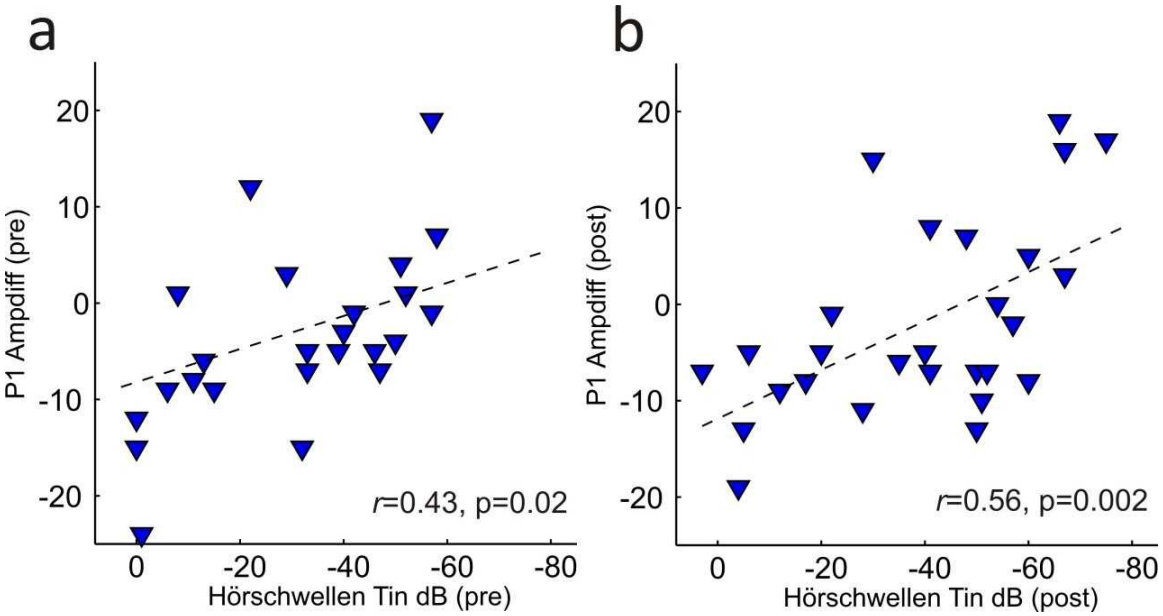


Fig. 19: Right-left difference between P1 amplitudes and hearing thresholds at the tinnitus frequency before and after therapy

[201] Cf. Schneider et al., 2009.

Just as a connection with tinnitus could be proven in the first, unconscious response of the auditory cortex, this is also the case for hearing thresholds in the tinnitus frequency range. It can therefore be concluded that tinnitus noises and the accompanying hearing loss develop at the very beginning of acoustic content processing and do not arise in later stages of auditory processing.

14.2.1.4 P1 amplitude vs. change in hearing thresholds

This is very well supported by two correlations between the P1 response and the hearing thresholds in the follow-up measurement in the tinnitus frequency range and in the non-tinnitus frequency range.

In the tinnitus range, the follow-up measurement reveals a correlation specifically in the right auditory cortex just below the normally defined significance range (r=0.32, p=0.08, Fig. 20a). A slightly larger sample size would probably yield a significant result. This is a positive correlation, i.e. the weaker the right P1 response, the better the hearing threshold (in relation to the defined normal value) in the tinnitus frequency range. The P1 response of the only test subject whose hearing threshold has risen in the tinnitus range shows a P1 response that fits exactly into this picture. If we understand health as a better balance of the relationships between bodily reactions, the test subject's treatment result could be considered unusual, but possibly "healthy" in accordance with his overall constitution.

In the range of non-tinnitus frequencies, a corresponding significant correlation is found not in the right but in the left auditory cortex, and indeed as a negative correlation: the stronger the left P1 response, the better the hearing threshold (in relation to the defined normal value) after treatment. (pre: 0.33, p<0.05, post: r=-0.37, p<0.05, Fig. 20b).

The fact that the correlation is positive on the right and negative on the left is obviously related to the connection between the relative dominance of the right and left P1 responses, as explained in the previous chapter: a strong left P1 response in relation to the right causes a slight hearing loss, while a strong right P1 response in relation to the left causes a high hearing loss.

It is not clear to me why the correlation is more pronounced on the right for the tinnitus frequency and more on the left for the non-tinnitus frequencies. However, based on the results in section 14.2.1.3 (right-left difference in P1 amplitude vs. hearing thresholds), I would expect a significant effect for both tinnitus and non-tinnitus frequencies in a larger sample.

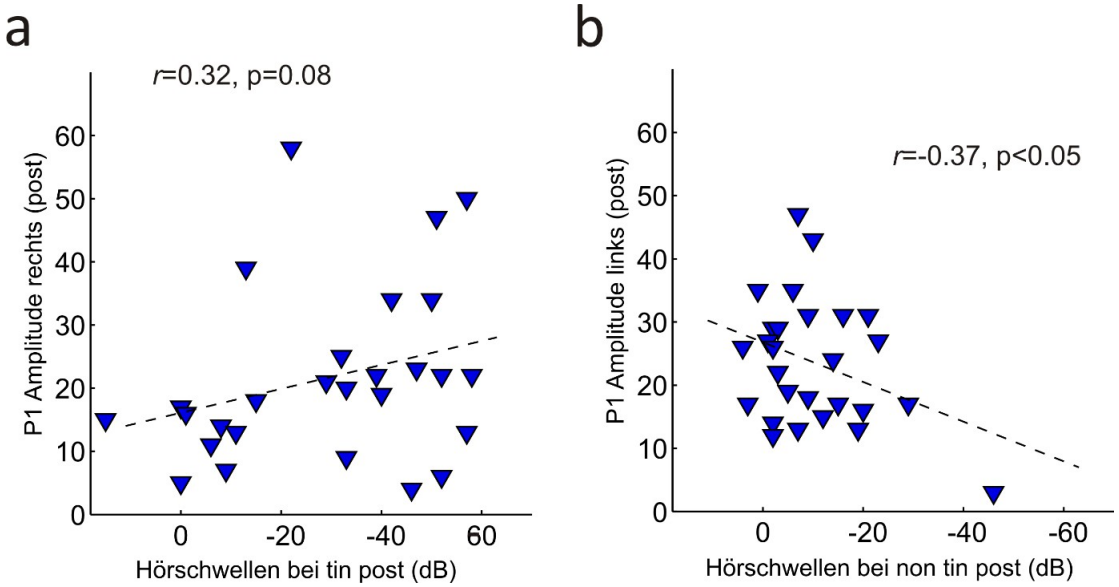


Fig. 20: Correlations a) between the P1 amplitude on the right (post) and the hearing thresholds at the tinnitus frequency (post) and b) between the P1 amplitude on the left and the hearing thresholds in the non-tinnitus frequency range

Once again, it can be observed that the improvement in hearing thresholds in the course of successful tinnitus therapy is already noticeable in the primary P1 response in the auditory cortex. In fact, this correlation is no longer observable in the later N1 and P2 responses, which correspond more to conscious hearing[202].

14.2.1.5 Voice vs. change in hearing thresholds

In Fig. 21, the improvement in hearing thresholds during the course of treatment is plotted on the x-axis, while the attenuation of the voice in the ranges above 5.3 kHz is plotted in dB on the y-axis (i.e., the reduction in voice intensity relative to the intensity of the fundamental frequency).

It can be seen that the more the hearing thresholds of the test subjects in the tinnitus range improved during the course of therapy, the higher the voice volume after therapy in the ranges...

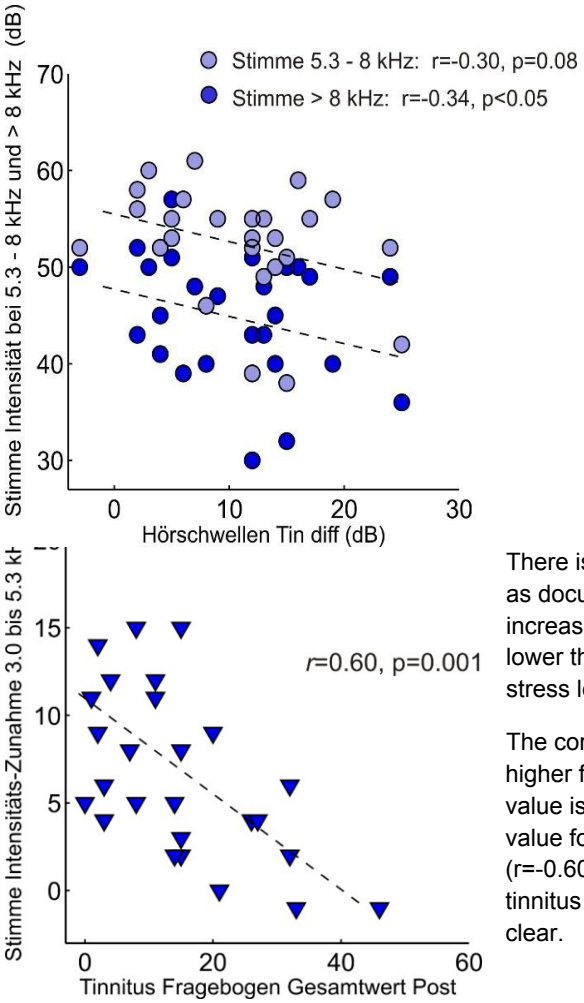


Fig. 22: Correlation between the increase in voice intensity in the 3.0-5.3 kHz segment and the TF stress values

between 5.3 and 8.0 kHz and above 8.0 kHz.

The correlation is significant for the range above 8 kHz and is just below the usual significance limits for the range between 5.3 and 8.0 kHz. A larger sample size would probably yield a significant result.

The reason for the correlation could be that better hearing also allows for better control of the sound of the voice, a form of biofeedback via hearing one's own voice.

An immediate neural effect is also possible, as the vocal cords and a large part of the auditory nerves are connected via the vagus nerve.

There is a clear correlation between the stress caused by tinnitus, as documented in the Tinnitus Questionnaire (TF), and the increase in intensity in the higher formant range of the voice. The lower the stress level, the more resonant the voice. The higher the stress level, the lower the intensity in this range (Fig. 22).

The correlation coefficient between the increase in intensity in the higher formant range of the voice (3.0 to 5.3 kHz) and the total TF value is r=-0.60 (p<0.001). When looking at the individual TF value for emotional stress, the correlation value is equally high (r=-0.60, p<0.001). For the other stress factors addressed in the tinnitus questionnaire, the correlation is also apparent, but less clear.

[202] Cf. Schneider et al., 2009.

14.2.1.7 Voice vs. parasympathetic activity

When we correlate voice volume with heart rate variability measurements, further interesting correlations emerge.

Voice volume correlates with the RMSSD value of the HRV measurement in the higher formant range (3.0-5.3 kHz) mentioned above, i.e. the more active the parasympathetic nervous system is, the more resonant the voice is (Fig. 23). This correlation applies before and after therapy, and is even slightly more pronounced before therapy (r=0.42, p<0.05) than after (r=0.39, p<0.05).

Any correlations between voice volume and heart rate or SI value are statistically insignificant.

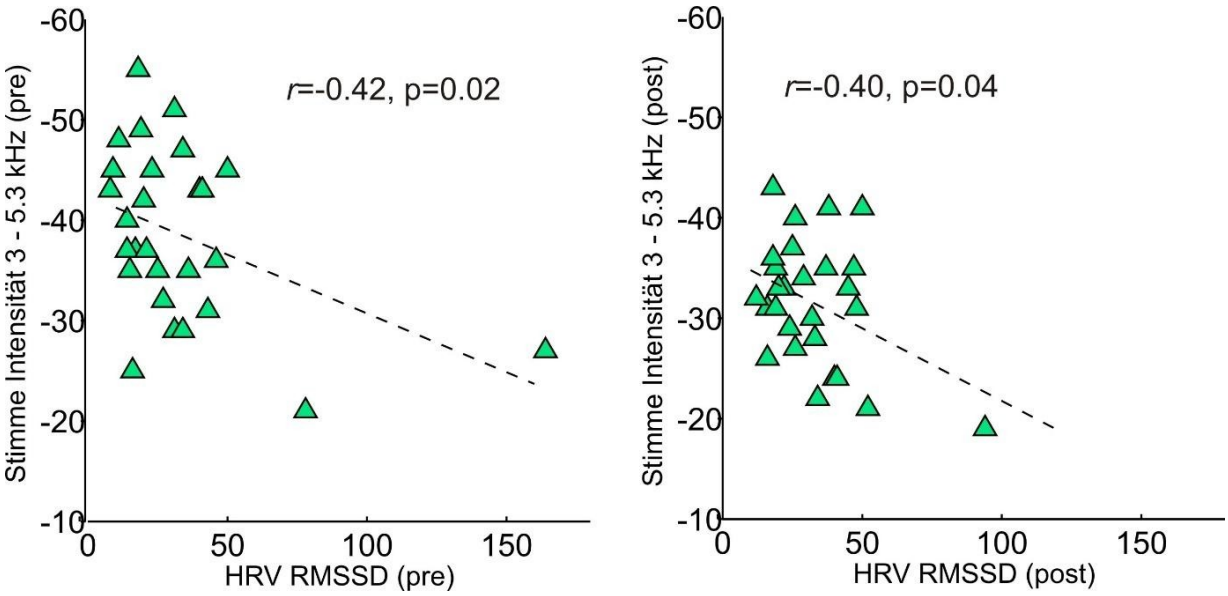


Fig. 23: Correlation between the increase in voice intensity in the 3.0–5.3 kHz segment and the TF stress values

It should be noted that the stress experienced by the test subjects (according to TF) and the relaxation experienced (according to RMSSD value) are reflected in a specific frequency range of the voice (in our segment division 3.0-5.3 kHz).

14.2.1.8 Sympathetic and parasympathetic activity vs. heart rate

An important indicator of experienced stress – including that caused by tinnitus symptoms – is the activity of the sympathetic and parasympathetic nervous systems.

A stronger activation of the sympathetic nervous system (SI value) tends to be associated with a higher heart rate (HR), while a stronger activation of the parasympathetic nervous system (RMSSD value, below "RM") with a lower heart rate.

As already mentioned, there is no clear correlation between the SI value and heart rate or between the RMSSD value and heart rate *before* treatment, but there is a clear correlation *afterwards* (SI vs. HR: r=0.46, p=0.01, RMSSD vs. HR: r= 0.35, p=0.06, Fig. 24).

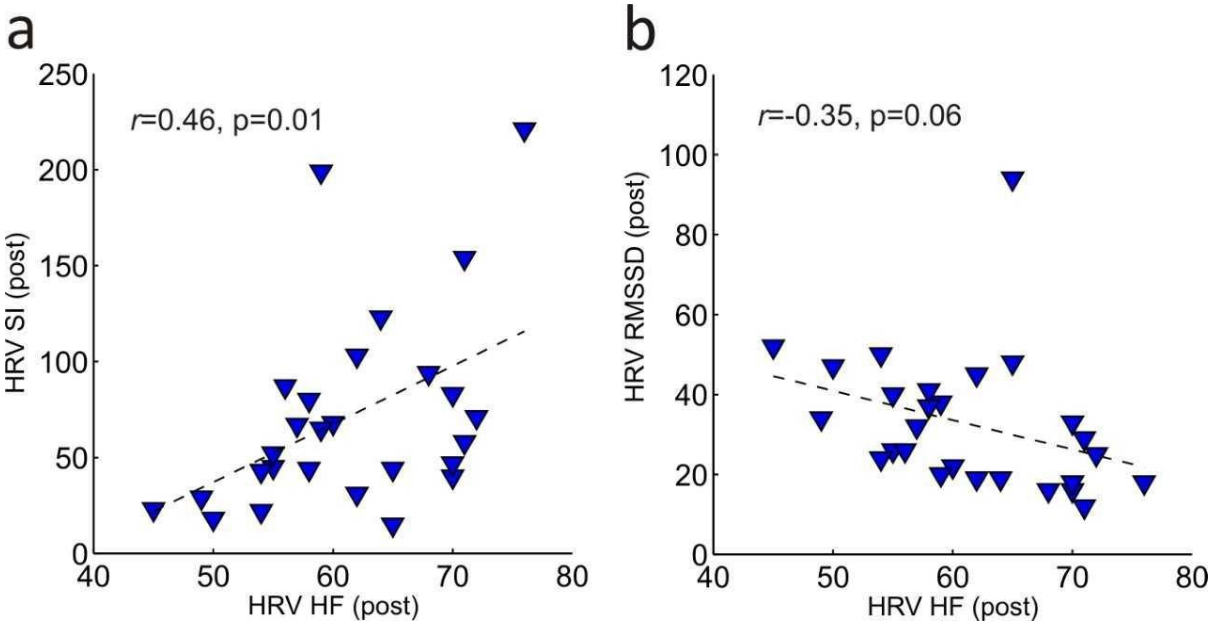


Fig. 24: Correlation between a) the stress index and b) the RMSSD and heart rate after treatment

14.2.1.9 Sympathetic vs. parasympathetic activity

Similarly, there is a comparatively weak correlation between the SI and RMSSD values before treatment (r= -0.48, p<0.05), but a strong correlation after treatment (r= -0.60, p=0.001). As expected, the sympathetic values tend to be higher the lower the parasympathetic values are and vice versa (Fig. 25).

It is therefore not the case that the test subjects had higher sympathetic and lower parasympathetic values in a balanced manner at the beginning of treatment, when their stress levels were comparatively high (according to everything we were able to measure and ask), and that this finding was reversed at the end of therapy. Instead, at the beginning, the sympathetic and parasympathetic values show no correlation in relative terms, whereas afterwards – regardless of how high one value is and how low the other is – they are in balance with each other.

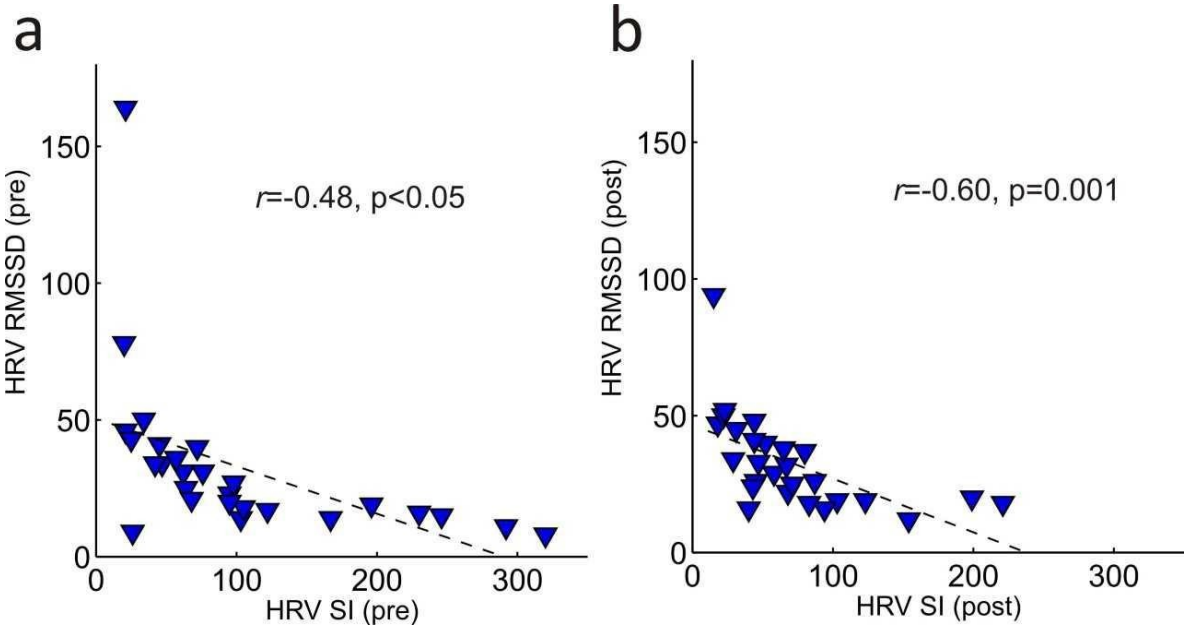


Fig. 25: Correlation between RMSSD value vs. SI value of HRV measurement before and after treatment

14.2.2 Relationships between subject characteristics and measurement results

Now let us consider the correlations between subject characteristics that can be regarded as (essentially) unchangeable (gender, age at the time of therapy, musicality as independent subject variables) and the therapy results (changes in hearing characteristics and stress symptoms as dependent measurement variables).

14.2.2.1 Gender vs. therapy effect with regard to tinnitus volume

No correlations could be established between the gender of the subjects and the results of the pre- and post-measurements with regard to tinnitus volume or other changes caused by the treatment.

14.2.2.2 Age vs. therapy effect with regard to tinnitus volume

Although tinnitus tends to develop in older age, we observed only minor effects with regard to the effectiveness of the therapy depending on age. Based on the psychoacoustically measured volume, there is no significant correlation (r=0.26, p=0.19, Fig. 26a). Based on the subjective scaling of the test subjects, there is a correlation slightly below the usual significance thresholds (r=0.35, p=0.07, Fig. 26b). This is positive, i.e. older test subjects tend to have slightly better therapy results. It is quite possible that a larger sample size would reveal a more pronounced correlation.

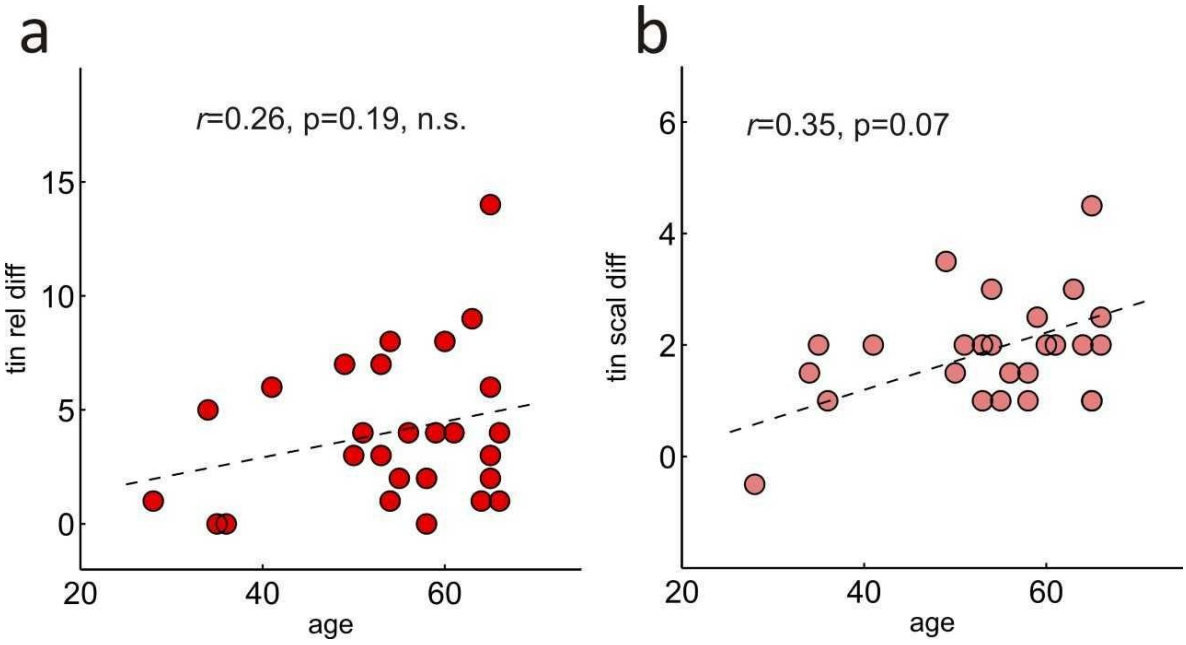


Fig. 26: Correlation between the change in a) psychoacoustically measured or b) scaled tinnitus loudness and the age of the test subjects

14.2.2.3 Musicality and heart rate variability:

The positive correlation between the SI value and a higher heart rate (Fig. 27a) and the negative correlation between the RMSSD value (referred to as "RM" below) and the heart rate (Fig. 27b), already mentioned in section 14.2.1.8, are significantly more pronounced in non-musicians (SI vs. HR: r=0.56, p<0.05, RMSSD vs. HR: r=-0.60, p<0.05) than in musicians (n.s.) and is more pronounced in the follow-up measurements

than in the pre-measurements. One possible explanation for this correlation could be that musicians have involuntarily learned to synchronise their heart rhythm with the music they play and hear, thereby decoupling it from stress or challenges such as auditions and concerts (which may be associated with performance anxiety).

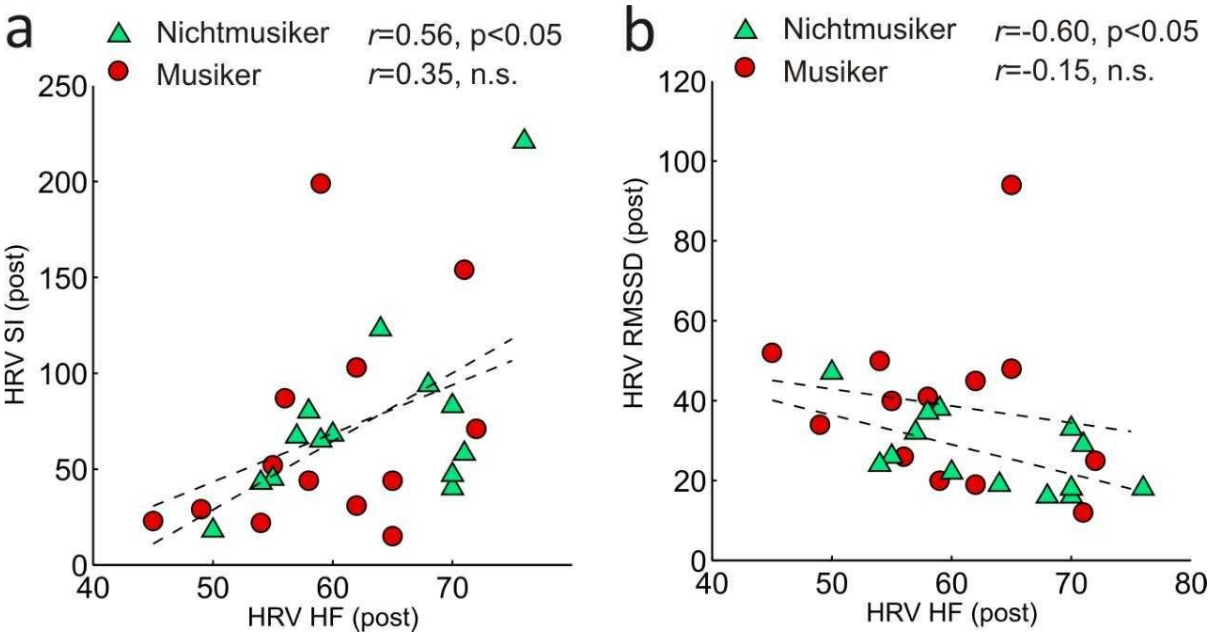
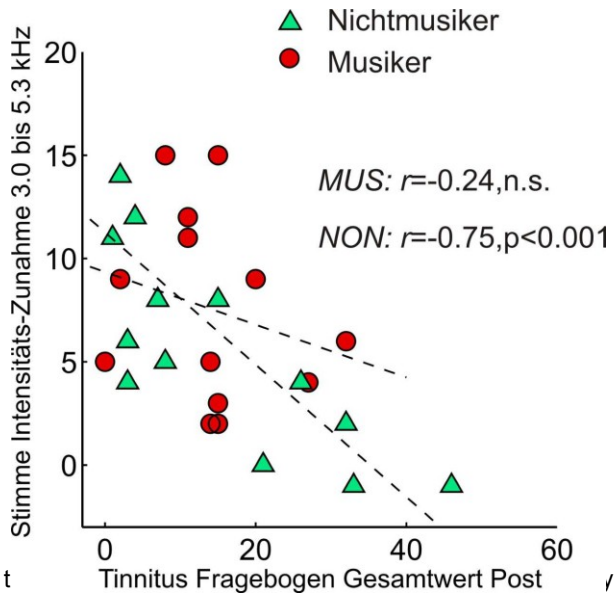


Fig. 27: Correlation between a) the stress index (sympathetic nervous system value) and b) the RMSSD (parasympathetic nervous system value) and heart rate after treatment

14.2.2.4 Musicality and stress (TF) vs. vocal volume



Once again, it is worth mentioning the correlation between the voice in the higher formant range (3.0 to 5.3 kHz) and the experience of stress, as documented in the tinnitus questionnaire[203]. This correlation exists mainly among non-musicians (r= 0.75, p<0.001). Among musicians, the effect (r=-0.24) is not significant (Fig. 28). For both groups, it is more pronounced in the follow-up measurement than in the initial measurement.

One possible explanation for this correlation could be that musicians hear their voice more accurately than non-musicians and therefore have more opportunities to involuntarily regulate their voice tone and volume. In addition, the group of musicians may also place more value on the sound of their voice, so that their interest in this regulation could also be higher – for

t / to regulate the voice, e.g.

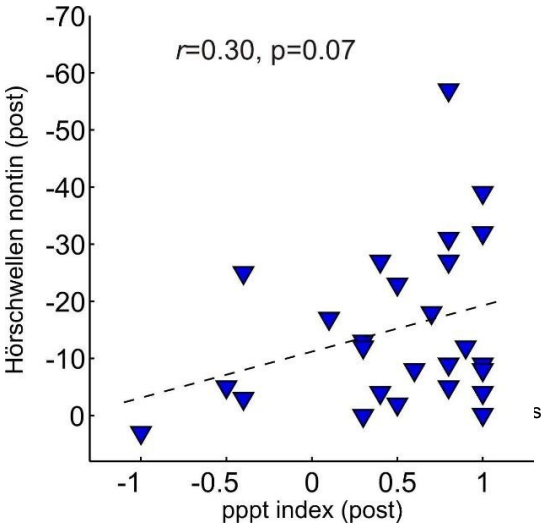
[203] See section 14.2.1.6.

adapting the voice to musical requirements under concert conditions requires – consciously and unconsciously – training in decoupling stress-related influences from the sound and volume of the voice.

14.2.2.5 Hearing profile and hearing threshold lowering

Some people hear mainly the fundamental tone in complex sounds such as bell tones, while others hear mainly the overtones. Fundamental tone listeners tend to focus on the sound as a whole (fundamental tone and timbre), while overtone listeners tend to focus on individual aspects (sound spectrum)[204].

In Fig. 29, the y-axis shows the reduction in hearing thresholds in the non-tinnitus frequency range during the follow-up measurement, while the x-axis shows the index value for the degree of focus of the test subjects on fundamental tones (minus range) or overtones (plus range).



If we form two subgroups based on the test for overtone and fundamental tone perception[205], the fundamental tone listeners group comprises only 4 subjects (the minus range on the x-axis in the graph), while the overtone listeners group comprises 23 subjects (the plus range on the x-axis). Despite this rather asymmetrical group division, the correlation between the size of the hearing threshold reduction after therapy compared to before is r=0.30 (p=0.07) for fundamental tone listeners compared to overtone listeners, which is just below the usual significance thresholds. Before therapy, the correlation is again slightly weaker than afterwards, at r=0.26 (p=0.23). A larger number of test subjects, and in particular fundamental tone listeners would probably yield a more significant result. Based on this assumption, it can be said that overtone listeners have poorer hearing thresholds on average than fundamental tone listeners.

The fact that these values are very similar before and after therapy seems to me to indicate a predominantly *innate* musical predisposition. The fact that they nevertheless improve *slightly* could indicate a more flexible availability of musical potential.

14.2.3 Relationships between exemplary treatments and measurement results

Thirdly, I would like to consider possible correlations between the course of treatment and the measurement results of the test subjects in general and the directly affected persons in particular. In doing so, I will focus on the three individual courses of treatment documented in Chapter 11, but will also include observations from the other treatments.

The experiment included measurements before and after treatment, but not during treatment. For this reason – and because it is not possible to draw general conclusions from individual cases – the

---

[204] Schneider, 2005, Fig. 1b: Definition of a cutoff value based on the distribution at the saddle point. (The left half are fundamental tone listeners, the right half are overtone listeners.)
[205] Hearing index for fundamental and overtone perception (Pitch Perception Preference Test), ibid.; cf. section 12.4.

The considerations presented here regarding the relationship between the course of treatment and the results subsequently obtained are of a more *subjective* nature than the correlations discussed in the previous chapters. With this reservation in mind, I would like to attempt to establish a few connections here.

As an example, I would first like to present and discuss the most important measurement results for the clients discussed in Chapter 11.

14.2.3.1 Measurement results for Ms W.

The pre- and post-measurements for Ms W. yielded the following results. Change in brain activity:

For the P1 response (automatic, unconscious hearing), the time difference between the brain hemispheres is reduced from 1 to 0 milliseconds, i.e., the brain hemispheres are completely synchronised after therapy (within the measurement accuracy).

For the N1 response (focused listening, attentive listening), the time difference (or degree of synchronisation) between the brain hemispheres remains unchanged at 4 nAm.

For the P2 response (contextual hearing, listening, hearing), the time difference between the brain hemispheres is reduced from 21 to 6 milliseconds, i.e. by more than two thirds.

The fact that the complete synchronisation of the P1 response observed in Ms W. is accompanied by a significant improvement in hearing thresholds and an (almost) complete resolution of the ear noises fits in perfectly with the measurements taken from all test subjects: we observed a correlation between the synchronisation of the P1 responses and the hearing thresholds and tinnitus volumes. On average, the better the synchronisation of the P1 response, the better the hearing thresholds are, both at the tinnitus frequency and at the non-tinnitus frequencies [(206)], and the better the scaled tinnitus volumes are. It can be added that the greater the change in the measured tinnitus volume in the course of therapy, the greater the improvement in P1 synchronisation [207].

In the flexible equilibrium of hearing, a change in hearing thresholds brings about a change in ear noises and other characteristics of hearing.

Change in the perception of noise:

The absolute volume of the noise compared to external noise is reduced by 23 dB for Ms W. (from -64 to -87 dB under FS).

The relative volume decreased from 7 to 1 dB above the hearing threshold when measured immediately after therapy, with the pitch remaining at 70 Hz.

On the ten-point scale for self-assessment of noise intensity, Ms W. reports a noise reduction from 4.5 to 0 points (complete silence) in the follow-up measurement the next day.

Ms W.'s ability to detect differences in volume improved from 0.7 to 0.5 dB. This means that the loudness difference threshold decreased by 0.2 dB.

Her ability to detect frequency differences improved from 14.1 to 10.1 cents (1 cent = one hundredth of a semitone). This means that whereas she was previously able to recognise intervals of one-seventh of a semitone, she can now identify intervals of one-tenth of a semitone.

---

[206] See sections 14.2.1.3 and 14.2.1.4.
[207] See section 14.2.1.2.

Ms W.'s air conduction hearing threshold improves from -35 to -11 dB SPL in the tinnitus frequency range. Her hearing ability therefore increases by 24 dB in this range.

In the ranges outside the tinnitus, her hearing threshold improves from an average of -27 to -5 dB. Her hearing ability therefore increases by an average of 22 dB in this range.

For changes in Ms W.'s hearing thresholds, see the graph in 11.4.

Ms W.'s hearing thresholds improved significantly. The absolute tinnitus volume also changed, so that the relative volume immediately after therapy was close to zero and was rated as zero by Ms W. the following day. The volume she rated and the psychoacoustically measured volume corresponded closely, which is consistent with the findings for the group as a whole[208].

If the absolute tinnitus volume remained constant, the reduction in hearing thresholds would lead to an increase in relative volume, i.e. to subjectively louder ear noises. However, it can be seen that the overall structure of the hearing-specific values and hearing characteristics is changing, so that the absolute and ultimately the relative tinnitus volume also decreases with the hearing threshold.

Ms W.'s ability to detect differences in volume and frequency is also improving. As a model, one could possibly say: if the brain can better identify frequency ranges with background noise, it can also better downregulate the noises in the ear.

Change in stress experience:

Ms W.'s heart rate decreases slightly during the course of therapy (54.9 compared to 59.6 bpm before therapy). Heart rate variability increases significantly. The stress index (SI, sympathetic value) falls from 95.2 to 44.6. The value for the activity of the regenerative nervous system (RMSSD, parasympathetic value) rises from 23.1 to 25.7 msec.

The total score for her stress experience on the tinnitus questionnaire drops from 12 to 8. Specifically, all stress values (emotional, cognitive, intrusiveness, hearing problems, sleep disorders, somatic complaints) have decreased.

In the frequency range 0.3-0.5 kHz, the average volume of her voice increases by 7 dB, in the range 0.5-0.9 kHz by 2 dB, in the range 0.9-1.7 kHz by 0 dB, in the range 1.7-3.0 kHz it decreases by 5 dB, in the range 3.0-5.3 kHz it increases by 15 dB, in the range 5.3-8.0 kHz by 8 dB and in the range above 8.0 kHz by 4 dB. This means that her voice becomes more resonant in the low frequency range, while in the lower mid-range it remains partly at the previous level and partly slightly weaker, and in the upper mid-range and high frequency range it becomes significantly more powerful and resonant.

All measured values indicate a reduction in Ms W.'s stress levels. The fact that the heart rate decreases and the RMSSD value moves in the opposite direction to the SI value is a typical development, with the latter reacting more weakly or more slowly than the former [209].

The fact that her voice volume increases in the ranges of 5.3-8.0 and above 8.0 kHz is consistent with the overall group, in which an increase in voice volume in these ranges is also accompanied by an improvement in hearing thresholds at the tinnitus frequency[210].

The fact that their voice volume increases in the 3.0-5.3 kHz range also corresponds to the results for the group as a whole, where an increase in intensity in this range is also associated with a reduction in

[208] See section 14.2.1.1.
[209] See sections 14.2.1.8 and 14.2.1.9.
[210] See section 14.2.1.5.

total score on the tinnitus questionnaire[211] . This corresponds to a change in the HRV measurement: similar to the overall group, the increase in Ms W.'s voice volume at 3.0-5.3 kHz is accompanied by an improvement in the RMSSD value[212] .

14.2.3.2 Measurement results for Mr K.

The pre- and post-measurements for Mr K yielded the following results: Change in brain activity:

For the P1 response (automatic, unconscious hearing), the transit time difference (i.e., increased synchronisation) between the brain hemispheres is reduced from 2 to 0 msec. The brain hemispheres are therefore completely synchronised after therapy (within the measurement accuracy).

For the N1 response (focused listening, attentive listening), the time difference between the brain hemispheres is reduced by 25% from 4 to 3 milliseconds.

For the P2 response (contextual hearing, listening), the time difference between the two hemispheres remains constant at 0 milliseconds.

A graph showing Mr K.'s neurological responses can be found in section 12.1.

The complete right-left synchronisation of the primary response (P1) with simultaneous complete (or almost complete) resolution of the ear noises and improvement of the hearing thresholds can be understood as an example of the correlation between P1 synchronisation and hearing thresholds[213] or between P1 synchronisation and tinnitus volume[214].

Change in noise perception:

During the course of treatment, the frequency of the dominant tone is reduced from 15 to 14 kHz. The absolute volume of the noise is reduced by 7 dB (from -91 to -98 dB SPL).

The relative volume decreases from 5 to 0 dB above the hearing threshold. In his self-assessment, he rates the noise reduction from 2 to 0 points on a ten-point scale. He also states that he sometimes thinks he can just about hear the sound at the threshold of perception, sometimes cannot hear it, and sometimes does not know whether he can hear it[215].

Mr K.'s ability to detect differences in volume improves from 0.7 to 0.1 dB. This means that the loudness difference threshold has decreased by 0.6 dB.

His ability to detect frequency differences has decreased from 0.8 to 1.8 cents (1 cent = one hundredth of a semitone). This means that whereas he was previously able to detect intervals of 1/125th of a semitone, he can now only identify intervals of around 1/56th of a semitone.

Mr K.'s air conduction hearing threshold improves in the range of the dominant tinnitus frequency from an average of -4 dB SPL to -1 dB. This means that his hearing ability increases by 3 dB in the range of the tinnitus frequency.

---

[211] See section 14.2.1.6
[212] See section 14.2.1.7.
[213] See sections 14.2.1.3 and 14.2.1.4.
[214] See section 14.2.1.2.
[215] This is similar to the reports of test subjects who say they can no longer hear the sound, but that something is still there. Some people seem to have an awareness of subconsciously perceived sounds below the threshold of hearing.

In areas outside the tinnitus, his hearing threshold changes from an average of 2 to 1 dB. His hearing ability is therefore slightly reduced by an average of 1 dB in the non-tinnitus frequency range.

The fact that Mr K.'s scaled tinnitus volume and the volume measured in him correspond well is characteristic of the overall group[216].

It is characteristic that most of Mr K.'s measured hearing characteristics have improved along with his hearing thresholds. The fact that his ability to detect frequency differences has decreased (although it is still at an extremely high level) is very unusual compared to other test subjects and could be related to the suggestions that his ear can hear with varying degrees of precision at different times in order to adapt to different hearing goals and needs. This suggestion was a central part of the therapy.

Change in stress experience:

Mr K.'s heart rate drops from 66.5 to 57.6 bpm over the course of therapy. His heart rate variability increases significantly, which means an improvement in his ability to respond to stress. The stress index (SI, sympathetic value) remains almost the same at 44.4 compared to before
42.2. The value for the activity of the regenerative nervous system (RMSSD, parasympathetic value) increases from 33.5 to 41.3 msec, i.e. there is an increase in the body's ability to regenerate.

The total score for stress experience on the tinnitus questionnaire according to Goebel and Hiller (and correspondingly the individual values) is 0 before and after.

In the frequency ranges 0.3-0.5, the average volume of his voice remains the same compared to the fundamental tone; in the range 0.5-0.9 kHz, it decreases by 2 dB; in the range 0.9-1.7 kHz, it increases by 4 dB; in the range 1.7-3.0 kHz, by 10 dB; in the range 3.0-5.3 kHz it increases by 5 dB, in the range above 5.3-8.0 kHz by 3 dB and in the range above 8.0 kHz by 2 dB. This means that his voice becomes more resonant, especially in the mid-range.

Mr K. states before the therapy that the tinnitus does not bother him at all. In this context, it seems logical that the SI value is only slightly reduced. What is unusual is that the RMSSD value shows a much stronger adjustment. It seems as if Mr K. is not stressed either before or after the therapy, but his ability to regenerate has nevertheless improved in the course of the therapy.

The fact that the intensity of his voice increases in the 5.3-8.0 and above 8.0 kHz ranges, while his hearing thresholds at the tinnitus frequency improve, corresponds to the results for the overall group[217].

The improvement in voice volume in the 3.0-5.3 kHz range is accompanied by an improvement in the overall score on the tinnitus questionnaire for the entire group [218]; such an improvement is not possible for him because the score was already zero to begin with. However, the improvement in voice volume in this range is also reflected in an increase in the RMSSD value for the overall group [219], and this correlation is also found in Mr K.

[216] See section 14.2.1.1.
[217] See section 14.2.1.5.
[218] See section 14.2.1.6.
[219] See section 14.2.1.7.

14.2.3.3 Measurement results for Mr E.

The preliminary and follow-up measurements for Mr E. yielded the following results: Change

in brain activity:

For the P1 response (automatic, unconscious hearing), the time difference between the two hemispheres of the brain is reduced from 7 to 1 millisecond, i.e. to one seventh of the initial value; the responses of both hemispheres are therefore largely synchronised after therapy.

For the N1 response (focused listening, hearing), the 2 msec difference in processing time between the two hemispheres of the brain remains unchanged.

For the P2 response (contextual hearing, listening, hearing), the time difference between the brain hemispheres remains unchanged at 3 milliseconds.

Mr E.'s very strong increase in P1 synchronisation, accompanied by a significant improvement in hearing thresholds and complete resolution of ear noises, corresponds to the correlations found between P1 amplitudes and hearing thresholds [220] and between P1 synchronisation and tinnitus volume [221].

This effect was only significantly demonstrated in the test subjects for the P1 response, but not for N1 or P2. It may be a coincidence that Mr E.'s N1 and P2 responses remain unchanged, but at the same time it typically illustrates the findings we have for the group as a whole[222].

Change in noise perception:

The absolute volume of the noise is reduced by 18 dB for Mr E. (from -45 to -63 dB below FS). The relative volume is reduced from 4 to 0 dB above the hearing threshold. In his self-assessment, he rates the noise reduction from 2 to 0 points (complete silence) on a ten-point scale.

Mr E.'s ability to detect differences in volume improved from 1.0 to 0.4 dB. This means that the loudness difference threshold decreased by 0.6 dB.

His ability to detect frequency differences has decreased from 6.8 to 3.4 cents (1 cent = one hundredth of a semitone). This means that whereas he was previously able to detect intervals of around 15th of a semitone, he can now identify intervals of around 30th of a semitone.

Mr E.'s air conduction hearing threshold improves in the range of the dominant tinnitus frequency from an average of -51 to -32 dB SPL. His hearing ability therefore increases by 19 dB in the tinnitus frequency range.

In the ranges outside the tinnitus, his hearing threshold improved from an average of -8 to -6 dB. His hearing ability therefore increases by an average of 2 dB outside the tinnitus frequency.

The fact that the tinnitus volume scaled and measured in Mr E. corresponds well with the findings for the overall group [(223) is] also [consistent with] the findings for the overall group.

It is characteristic that the resolution of the tinnitus is accompanied by an improvement in the hearing threshold and that other hearing abilities have also improved along with both.

---

[220] See sections 14.2.1.3 and 14.2.1.4.
[221] See section 14.2.1.2.
[222] See section 14.2.1.4.
[223] See section 14.2.1.1.

Change in stress experience:

His average heart rate drops from 68.6 to 62.4 bpm during the course of therapy. His heart rate variability (i.e., the variation in beat cycle duration) increases significantly (see graphs in 11.2). The stress index (SI, sympathetic value) falls from 94.6 to 31.0. The value for the activity of the regenerative nervous system (RMSSD, parasympathetic value) rises from 19.7 to
45.2 msec.

Mr E.'s total score for stress experience in the tinnitus questionnaire drops from 19 to 2. Specifically, emotional distress (from 5 to 1 points), intrusiveness (from 4 to 0), hearing problems (from 9 to 1) and somatic complaints (from 1 to 0) have decreased.

The average volume of his voice compared to the fundamental tone increases in the frequency range 0.3 - 0.5 kHz by 16 dB, in the ranges 0.5 - 0.9 kHz and 0.9 - 1.7 kHz by 10 dB each, in the range 1.7-3.0 kHz by 11 dB, in the range 3.0-5.3 kHz by 9 dB, in the range 5.3-8.0 kHz by 14 dB and in the range above 8.0 kHz by 9 dB. This means that his voice becomes more powerful and resonant in all frequency ranges (see the diagrams in 11.3).

All stress-related values have improved for Mr E. The development of the HRV values typically reflects the findings we also have for the overall group, namely that the heart rate and SI value decrease and the RMSSD value increases[224]. What is atypical, if anything, is the extent to which the SI value and, above all, the RMSSD value change. Viewed individually, however, this corresponds very well with the enormous drop in the tinnitus questionnaire score and with the improvement in voice volume across the entire sound spectrum above the fundamental tone.

The fact that his voice volume becomes stronger in the ranges of 5.3-8.0 and above 8.0 kHz is consistent with the overall group, in which an increase in voice volume in these ranges is also accompanied by an improvement in hearing thresholds at the tinnitus frequency[225].

The fact that his voice volume increases at 3.0–5.3 kHz also corresponds to the results for the overall group, where an increase in intensity in this range is also associated with a reduction in the overall score on the tinnitus questionnaire[226]. This is consistent with a change in the HRV measurement: similar to the overall group, the increase in Mr E.'s voice volume at 3.0–
5.3 kHz is accompanied by an improvement in the RMSSD value[227].

14.2.3.4 Apparent stagnation at the beginning – or initial treatment success

The initial response of the test subjects to questions about changes is often that nothing has changed. Ms W. initially states: "I don't notice any difference," and Mr E. responds to the question of whether his inner ear has already been able to downregulate the tinnitus: "Rather the opposite."

This could mean that Ms W.'s hearing threshold initially decreased at about the same rate as the absolute volume, so that the tinnitus sound appears to be just as loud. This would then mean that only when the hearing threshold decreases more slowly or less sharply than the absolute tinnitus volume does she notice that the noise is getting quieter.

In Mr E.'s case, it can be assumed that his hearing threshold temporarily dropped faster than the absolute tinnitus volume, so that he initially experienced the tinnitus as louder (in relation to the hearing threshold).

---

[224] See sections 14.2.1.8 and 14.2.1.9.
[225] See section 14.2.1.5.
[226] See section 14.2.1.6
[227] See section 14.2.1.7.

Occasionally, however, there is also positive feedback on the noise development at an early stage. For example, Mr K.'s first answer to the question about acoustic changes is: "I have the feeling that the spectrum is no longer so broad, except for one main tone, so to speak, and it is a little quieter." By "spectrum", Mr K. is referring to his previous statement that the tinnitus noise was "a very high-pitched tone that was difficult to identify, probably even several tones". This means that most of the tinnitus noises disappeared right at the beginning.

There may be several reasons why the change in Mr K. is happening so quickly:

On the one hand, Mr K. is the only test subject to have scored 0 points for all stress values in the tinnitus questionnaire prior to treatment. The noise in his ears does not bother him at all, so the fear of treatment failure, which often encourages objections to possible improvement and complicates treatment, does not play a role for him. On the other hand, Mr K. is extremely musical. As a professional musician, experience shows that he is likely to have more opportunities to actively regulate the noises in his ears than non-musicians. Thirdly, the therapeutic efforts so far have been aimed at enabling Mr K. to use his high musical potential to regulate the tinnitus and to make it attractive for him to do so. In particular, it is suggested that he can also downregulate his hearing abilities as needed in order to achieve a suitable setting for his hearing in the respective situation.

Following the treatment, Mr K. is one of only four test subjects to show a reduced (more than halved, but still extremely high) ability to recognise frequency differences. This is probably not despite, but precisely because of his high musicality and in connection with the
above-mentioned suggestions. His description that the "spectrum" of sounds he hears is no longer as broad fits well with this reduced frequency discrimination ability following treatment.

14.2.3.5 A change in the location of the tinnitus noises

The location from which the noise appears to originate can be inside or outside the body. Sometimes the location also seems to move within the body, which is apparently due to the fact that the different sub-frequencies of the tinnitus are located in different places in the body or in the environment.

At the beginning, Mr E. talks about "a very deep humming sound, which you think must be coming from outside, it can't be coming from inside". Later, when asked what has changed in his acoustic experience, he explains: "A downward pull, that's how I would describe it," then: "The sound has just shifted significantly, to the back of my head. The rest of the sound has somehow faded into the background... It's also higher," and a little later: "Now it's reached the back of my neck... Now it's almost in the middle. It's strange, when I concentrate on the right, there's nothing on the right, but it's still in the middle when viewed from the left." And finally: "Nothing on the right, and on the left at the back of the neck, but now a little lower, actually almost near the throat."

The sound can also be imaginatively made to wander and thus become more flexible. Remember Mr E.'s humming, which flew in front of his ear like a "big, fat moth" and was then sent on its way into the forest, or his buzzing, which looked "relatively stationary", so that Mr K. wondered
"Whether I can move it or whether *I* have to move myself" – whereupon we sat him on an imaginary chair on castors, which he used to move backwards away from the noise. In Mr K.'s case, the tinnitus noise was first transferred from his ear to his big toe and later mimed as being pulled out of his ear with his hand.

14.2.3.6 The shift in the hearing threshold

Together with the absolute tinnitus volume, the hearing threshold also changes regularly. The subjectively experienced relative tinnitus volume results from the difference between the absolute tinnitus volume and the hearing threshold (see sections 9.2 and 13.4). Occasionally, test subjects express themselves in a way that apparently refers to the initially relatively poor and later improved hearing thresholds.

For example, Mr E explains: "Underneath this high-pitched buzzing is a cotton wool ball of not being able to hear." During the course of therapy, Ms W says: "The buzzing has become quieter in my left ear... and it feels a little freer." When we ask his "sound engineer" to adjust the hearing threshold switches, Mr K explains: "Yes, that changes something... I don't think I can hold it so well. Now it's getting louder again, so the switches are going down again." It is not entirely clear whether Mr K. is also referring to the hearing thresholds when he describes his hearing experience synesthetically. For example, he says: "It's still there, but it feels better." "Well, somehow it's become softer." "It's a bit more relaxed. My head is a bit more relaxed." "It's become a bit rounder."
"The tinnitus is there – but relaxed... Soft too." "It's somehow smaller."

During the treatment, one female and one male test subject told me that my voice was now louder. Such feedback immediately suggests a reduction in the hearing threshold.

14.2.3.7 The disappearance of the noises

In two of the three test subjects whose tinnitus disappeared during the course of a session, the P1 responses became completely synchronised, and in the third, almost completely. In Ms W., the time difference was reduced from 1 to 0 milliseconds, and in Mr K., from 2 to 0. In Mr E., the time difference was reduced from 7 to 1.

The residual difference of 1 millisecond could indicate that Mr E. was still able to perceive a residual tone at the end by regulating his hearing, but that this tone was significantly closer to 0 than to 0.5 on the scale. This is consistent with the fact that we found a clear correlation between the scaled tinnitus volume before and after treatment and the change in P1 synchronisation in the test subjects on average[228].

My impression is that in cases of bilateral tinnitus, the noises on the right tend to dissipate more quickly than those on the left.

Ms W. was the first to give positive feedback on her experience of noise: "The humming on the right side [is] reduced, quieter... It has become quieter!" and then, a little later: "The humming has become quieter in my left ear... and it feels a little freer."

Mr E. gives the first feedback on an improvement: "It's much less on the right now, but not on the left," then, after work has actually been done on the noise on the left: "It's really gone on the right, well, almost gone," and finally, in response to the question about the noise on the left: "It's much less, but still there. But the one on the right is really... gone!" Later he says: "...nothing on the right, and on the left at the back of my neck" and finally: "It was just gone a few times."

This is consistent with the fact that in the MEG measurements, the amplitudes of the right-sided responses of N1 and P2 after therapy tend to be stronger on the right than on the left, and that the right-sided N1 and P2 amplitudes increase in more subjects than on the left in the course of therapy (see section 13.1).

There also seems to be a certain tendency for lower tones to dissipate more quickly than higher ones.

---

[228] See section 14.2.1.2.

For example, Mr E. first comments on the humming noise: "There's actually a strange gap there right now" and a little later, in response to the question about the buzzing: "It's much less on the right now, but not on the left".

If this is true, it could be related to the fact that the auditory cortex is wedge-shaped, with the primary (P1) responses to low tones occurring in the rear, wider part, where there is, so to speak, a lot of computing capacity available, and the corresponding responses to high tones occurring in the front, narrow part, where there is less capacity available for regulating auditory performance[229])

It seems to be the case that, during the course of treatment, tinnitus does not become uniformly quieter as a whole, but rather consists of partial tones that become quieter individually or in groups or disappear below the hearing threshold, giving the impression that the overall tone is becoming quieter. This is reflected in Mr K.'s comments, for example:

"I have the feeling that the spectrum is no longer as broad, except for one main tone, so to speak, and it is a little quieter." "I have the feeling that the main tone is a little less strong." "I have the feeling that one of the higher frequencies is now gone." "Perhaps [it is] a little more compact." And finally, in response to the statement by the pastoral counsellor/therapist:
"I would say that some of the tones have disappeared again..." "That could well be the case, yes!"

Mr E. explains: "It has become quieter again... [And] it has become even higher. Although it is difficult to distinguish between quieter and higher," and later he mentions that "one or more frequencies seem to drop out" for brief moments.

After treatment, Mr K. can sometimes still identify a residual tone at the limit of perception. The frequency of this tone is 1 kHz lower than that of the previously dominant tone. It is apparently a different partial tone that was not previously in the foreground. The fact that the frequency difference from the initial tone is so small fits well with Mr K.'s statements that it is
"Somehow a very high-pitched sound that is difficult to identify, probably even several sounds," as well as the comments: "I have the feeling that it has spread out a bit more" (because frequencies in the middle range of a cluster of sounds may have disappeared), "I have the feeling that one of the higher frequencies is now gone" and: "Perhaps [the residual noise] is a little more compact" (because frequencies in the high or low range of the cluster of tones may have disappeared).

Ms W. is a bit of an exception. The humming sound she describes disappears without any other, quieter sounds coming through. The residual sound, which is still measurable after the therapy before it disappears completely, is at exactly the same frequency that was determined in the preliminary measurement. Based on his other experience, the counsellor/therapist says: "A tinnitus noise consists of several to many partial noises," and Ms W. also distinguishes between different levers on the mixing console, but the only distinction that becomes clear during the treatment is that between the "humming on the right side," which disappears first, and the "humming... in the left ear," which dissipates later.

According to feedback, the disappearance of individual tinnitus overtones during treatment often seems to occur in small, sudden bursts. At around the same time, the hearing threshold appears to lower in stages, so that quieter sounds can be heard and other, previously unnoticed sounds can be detected. It is as if behind (almost) every sound there is another, quieter one hidden, which comes to the fore when the previous one has disappeared.

This sudden lowering of the hearing threshold is evident in the fact that test subjects often report that the sound is "gone", only to then mention the presence of a sound again.

---

[229] See Fig. 1 in section 8.1.

Ms W. initially says: "At the moment it's gone..." and later explains that it is "much better than before". Mr E says: "On the right it's really gone, well, almost gone". In response to the question of what the rest of the noise would look like if it were visualised, he asks: "The rest? ... What do you mean, the rest?" and explains a little later: "It's much less and now has a real fluttering sound to it..." In response to the chaplain/therapist's statement that "the body has taken the next larger magnifying glass. One sound has disappeared and the next one behind it is being focused on," he says: "The remaining sound has somehow faded into the background... It's also higher."

When I pantomime "pulling the tinnitus out of Mr K's ear" and ask him, "How does that change it...?" he explains that it becomes "thinner, but with small fibres sticking out like a rope". As I explain to Mr K., this seems to be a visualisation of the fact "that partial tones cease... and as a result, the rest becomes thinner".

In other cases, the noise seems to gradually fade [away], like a fade-out[230]. This appears to be the case with Ms W., who explains: "The humming on the right side [is] reduced, quieter... It has become quieter!" and a little later: "The humming has become quieter in my left ear". Most people are familiar with a similar effect when they experience short-term tinnitus for a few seconds as a "ringing in the ear" that gradually fades away, except that the fading can take longer in people with chronic tinnitus, in some cases much longer.

In Ms W.'s case, the psychoacoustic measurement immediately before and after therapy showed a change in relative volume from 7 to 1 dB above the hearing threshold. In the follow-up measurement the next day, she rated the noise at 0 points (complete silence) compared to 4.5 points before therapy.

The fact that the noises disappear more suddenly in some people and more gradually in others also seems to fit with the results of the study mentioned above, according to which 78% of patients who lost their chronic tinnitus reported a gradual disappearance of symptoms and 22% reported a sudden disappearance [231].

In addition to gradual and sudden disappearance, there is a third variant: in some subjects, the tinnitus is reduced by an increasing number of moments when the noise pauses. Mr E reports at the beginning of treatment: "There is a humming noise that comes and goes, only on the left, sometimes louder, sometimes quieter. At the moment, it is barely there." Later, he says: "There is actually a strange gap right now," and then: "It fluctuates between... it's not really on and off, but it feels a bit like that, it's just at the tipping point." "It's significantly lower and now has a real flutter in it... where it's gone, yes, or one or more frequencies are missing." "It was gone a few times just now."

A fourth variant is that patients forget their symptoms to such an extent that it is only in retrospect, after a long period of time, that they notice that they are no longer there and do not know when they disappeared. In this case, it is not short but rather longer phases of silence, of which the subjects are unaware. For example, a subject in the Heidelberg pilot study[232]repeatedly and emphatically that he had his tinnitus "all the time". After a conversation lasting over an hour, he remembered that he did not hear it when riding his motorbike and, a little later, that it was also absent when he was working on his motorbike. This forgetting can be learned, but through an involuntary, unconscious process in the body, not through planned, deliberate action. This is what Milton Erickson refers to when he says to his patient: "This afternoon there have been many moments when you have not heard your tinnitus. It is difficult to remember things that do not happen. But the ringing has stopped. But because there was nothing there, you do not remember it... What matters is

---

[230] Gradual fading of sounds until complete silence (sound engineering).
[231] Sanchez et al., 2021.
[232] See Chapter 4.

is to forget the ringing and remember the time when you did not hear any ringing. And that is a process you can learn. Now rely on your body." [233]

Strangely enough, many people are aware that tinnitus noises are still hidden below their hearing threshold, even though they consciously no longer hear them. This is how Mr E. explains it:
"Now what remains is what I meant earlier by 'unreal'. It is no longer clear: is it even a sound, is it even a noise?" In Mr E.'s case, we shifted the residual sound from the realm of current perception to the realm of perception simulated as memory, thereby resolving the ambivalence between the need to be able to hear the sound and not to hear it. This results in his ability to consciously no longer hear the sound because it is below the threshold of hearing, but to know that the unconscious continues to hear it there. When asked whether it is possible to "just see it as the memory of a previous sound", Mr E. initially responds with: "Yes, but something resists, almost a fear of loss", and after the introduction of a value guardian, he then says: "This *memory* is still there".

14.2.3.8 Muscle tension, sound of the voice, heart activity and TF values

A twitch in Mr K. while I pantomime pulling the noises out of his ear suggests a sudden relaxation of the muscles. From here, a connection can probably be made to his heart rate, which is significantly lower after the treatment: most of the body's blood vessels run through muscles, so relaxed muscles mean more blood vessels on average, which in turn causes a reduced heart rate. Mr K.'s more relaxed muscles can also be seen in the higher vibration capacity of his vocal cords in all ranges from 0.9 to over 8.0 kHz. (The values in the tinnitus questionnaire do not change, as they were already at zero before the treatment.)

A similar process can be seen in the work with Ms W. When the pastoral counsellor and therapist suggests to her that "the Ms W. who brought such stressful tension with her could step out of you," the subject shows a twitch, like a discharge emanating from her left shoulder. The counsellor/therapist says: "The one who has stepped out has quite tense muscles, including in the shoulder, back and neck area, but that certainly extends up through the jaw to the face. Is that how you imagine it?" To which she replies: "That's exactly how I imagine it. And here on the left it's a little more tense than on the right." When told that "your cervical spine has straightened up," she laughs, touches her left shoulder and explains: "Yes, it's getting a little easier here too..." As the general muscles gain mobility, so do the vocal cords: the counsellor/therapist shares his observation
"that you are more flexible from the middle of your back upwards in the shoulder-neck-throat-face area, and your voice seems to me to have become brighter. I hear more resonance in the high notes, it seems to me..." Ms W. replies: "It seems so, yes. – Yes, it *is*!" At this point, it can be observed that her breathing has also become calmer and freer. Looking at her left shoulder and arm, she says: "This side is a little looser. This curvature is actually better..." and adds: "Maybe I'm also a little more at peace with myself." Her heart rate is only slightly lower after the treatment, but her heart rate variability is significantly higher than before. (The sympathetic value drops sharply and the parasympathetic value rises.) The perception that her voice gains volume in the higher registers is clearly confirmed by the follow-up measurements of her vocal spectrum. Her score on the tinnitus questionnaire drops to two-thirds of the baseline value. All stress values (emotional, cognitive, intrusiveness, hearing problems, sleep disturbances, somatic complaints) have decreased.

---

[233]Erickson & Rossi, 2001, p. 155ff.

14.2.3.9 Biographical and symptom-oriented work

In my therapeutic experience, the aforementioned muscle twitching regularly occurs when muscles that have been tense for many years (or even since birth) begin to relax. This is usually associated with a fundamental change in the way clients or test subjects view their own lives and the world. This relaxation of the muscles can often be recognised in the form of a whole series of successive jerky movements or in a distinctly jerky rhythm of exhalation, while the breath becomes freer and deeper.

Ms W.'s muscle twitching occurs during the treatment of psychological stress, which is believed to have contributed to the development of her tinnitus symptoms, and is evident in a moment of letting go and relaxation during therapy. In Mr E.'s case, such a physical reaction is noticeable during direct work on reducing the noises in his ears. The "material" imaginatively removed during the "extraction" is treated by the organism of the clients or test subjects as if slowly but steadily removing a network of associations or a timeline of stresses related to the current issue.

The question of which focus – biographical or symptomatic – should be placed at the beginning is not easy to answer and probably cannot be answered in general terms.

The decision on how I worked in each case was influenced by considerations regarding the utilisation of elements of the initial situation that appeared to contribute to the symptoms. In my view, Mrs W.'s main issue was emotional stress caused by strongly empathising with the experiences and suffering of others, while Mr E.'s main issue was his interest in perfecting his own musical skills and Mr K.'s main issue was functioning as expected in his family and professional life.

In the case of Ms W., where the biographical stresses were dealt with first, there was initially negative feedback (as with Mr K.), but then further development progressed more rapidly. In the case of Mr E., where the treatment strategy was initially focused on symptoms and acoustic experiences, initial success was achieved relatively quickly. In the case of Mr K., where the focus was also on symptoms, but where the work was predominantly visual, success came later, after overcoming a number of obstacles.

The treatment results of the three – or 27 – test subjects seem to validate both the symptomatic and biographical approaches, but ultimately the overarching approach of using aspects of the problem to achieve a solution, i.e. the approach of utilising what is available to achieve what is desired.

14.3 Summary of neurological, hearing and stress-related results

In this chapter, I provide a summary of the most important measurement results from a neurological, hearing and stress-related perspective.

14.3.1 Neurological findings

During the course of therapy, the differences in duration between the primary, secondary and tertiary responses (P1, N1 and P2) in the auditory cortex decreased on both sides, i.e. the synchrony of the responses increased.

The synchrony of the right and left hemispheric (unconscious) primary P1 response in the auditory cortex correlates with the intensity of the tinnitus volume subjectively scaled by the test subjects.

It can be assumed that a high degree of synchrony between the two hemispheres of the brain is beneficial for resource-saving, error-free processing of auditory and other stimuli. In particular,

that tinnitus noises are obviously not only suppressed during further processing of the stimuli, but that even the earliest reactions in the auditory cortex contribute to whether or not a tinnitus noise occurs.

The improvement in the synchronisation of the P1 response between the right and left auditory cortex is greater during treatment the louder the tinnitus is at the start (according to the feedback on the scaling question), presumably because louder tinnitus has greater potential for improvement and this improvement then occurred in all test subjects. After therapy, the opposite is true: the greater the improvement in P1 synchronisation, the quieter the tinnitus is subsequently scaled by the test subjects.

The volume of the tinnitus is therefore a predictor of the extent of improvement in the processing time differences for auditory stimuli that can be expected in the course of therapy, and the degree of synchronisation is a predictor of the treatment success reported by subjects in terms of the subjectively experienced volume.

The synchronisation of the later N1 and P2 responses and the amplitudes of all three relevant responses in the auditory cortex (P1, N1 and P2) also increased. It appears that a strong amplitude indicates effective and error-free processing of auditory stimuli.

It is noticeable that the amplitudes of the P1, N1 and P2 responses tend to be stronger on the right than on the left. This difference exists in the pre- and post-measurements regardless of the therapy.
However, the amplitude increases more on the right than on the left in the course of therapy, probably due to the fundamentally higher reactivity of the right side.

This effect of stronger right-brain processing does not yet exist in P1 (involuntary, automatic hearing), but only in N1 (focused listening and attention) and even more so in P2 (listening, hearing, contextual hearing), so it is clearly related to the later, more conscious stages of processing what is heard[234].

There is a correlation between synchronisation at P1 and scaled tinnitus loudness, but not between P1 synchronisation and relative tinnitus loudness (measured psychoacoustically), although the scaled and measured relative loudness correlate highly significantly with each other.

This means, first of all, that the relationship that makes the two methods of measuring tinnitus loudness comparable is independent of the relationship between P1 synchronisation and scaled loudness.

The very high correlation between the scaled and measured volume, as well as the clear correlation between the scaled volume and P1 synchronisation – despite the very rough scale division into only 10 levels (and the much finer gradations in psychoacoustic measurement) – leads me to conclude that the use of a 100-step scale could possibly lead to even more accurate results.

How can it be that a spontaneous assessment on a 10-step scale fits the neurological findings much better than a finely differentiated measurement by repeatedly comparing the tinnitus volume with pre-recorded tones of different volumes?

The comparison between internal and external sounds in psychoacoustic measurement requires conscious listening to the ear noise (listening) as well as to the sounds played back

---

[234] The increase in amplitude due to the treatment is stronger on the right than on the left: for P1 in 13/27 subjects, for N1 in 15/27 subjects and for P2 in 18/27 subjects. The amplitude increased as a result of the therapy for P1 on the left in 19/27 subjects and on the right in 19/27 subjects, for N1 on the left in 21/27 subjects and on the right in 24/27 subjects, and for P2 on the left in 24/27 subjects and on the right in 25/27 subjects.

Noises therefore require a reflective recourse to all responses from P1 via N1 to P2, while scaling obviously draws directly on the unconscious response from P1 – conscious, reflective hearing, which is associated with N1 and P2, plays no role here. In this respect, it is not surprising that no correlation can be found here.

This means that the (unconscious, spontaneous) scaling mainly reflects the tinnitus volume according to the synchronisation of the primary P1 response, while the psychoacoustic measurement *also* draws on P1 (otherwise the correlation with the scaled volume would be difficult to explain), but (because the tinnitus tone is consciously listened to and contextualised during comparison) also takes into account the later processing stages of listening and reflective listening of N2 and P2.

14.3.2 Hearing results

Three out of 27 test subjects experienced complete resolution of their tinnitus during the 90-minute treatment. This means, first of all, that such results are entirely possible and can, in principle, be achieved in a single session. In my experience, the number of cases in which complete resolution of the noises is achieved in the first session is significantly higher in practice; Nevertheless, a rate of 11% total remission, measured against what is otherwise reported in the literature, can be considered a good result. It can be assumed with a high degree of probability that "more of the same will yield more of the same", so that more far-reaching results can be achieved in several consecutive sessions. At least, that has been my experience with clients who do not achieve total remission of their symptoms in the first session.

All 27 subjects experienced a reduction in noise according to their subjective feedback (scaling).

We found that this scaled feedback correlates with the area of involuntary hearing (response P1). In 24 out of 27 test subjects, this improvement was also psychoacoustically measurable. One difference between the scaled and psychoacoustic measurements is apparently that the latter takes into account the secondary and tertiary responses (N1 and P2), i.e. conscious listening and classifying listening.

Despite this difference, both types of measurement lead to the conclusion that the tinnitus volume has been reduced by 38% in the course of treatment.

This means that even in treatments where silence is not achieved in the first session, a significant improvement in symptoms is the norm.

For almost all test subjects (26/27), the air conduction hearing threshold improved. Their hearing ability in the frequency range of the tinnitus improved by an average of 10.5 dB.

The subjects' ability to estimate the volume of their ear noise also more than doubled on average after treatment.

This is consistent with the fact that the ability of the test subjects to distinguish between two sounds of different volumes improved in 20 of the 27 test subjects, by an average of 13% (section 13.3.1).

The subjects' ability to distinguish between the frequencies of two tones also improved significantly. Whereas the subjects were previously able to recognise an average of just under a quarter of a semitone, after treatment they were able to identify a sixth of a semitone as a difference in frequency (section 13.3.2).

This means that the reduction in tinnitus volume is only one – albeit the most clearly perceived – of many auditory characteristics that improve in the course of hypnosystemic treatment.

Strictly speaking, it is not the tinnitus that is treated, but the entire hearing system as a systemic network.

This potentially stimulates all bodily reactions that influence hearing, such as heart activity, blood circulation, muscle tension and other dimensions that can be described in physical, psychological, social and spiritual terms.

The question of "the chicken and the egg" often arises. On the one hand, some aspects of the "human" system react more quickly and others more slowly; on the other hand, we would do well to expect reciprocal or interconnected relationships, i.e. circular causality: as things stand at present, the chicken comes from the egg *and* the egg from the chicken...

It should be noted that the more the hearing thresholds of the test subjects improve in the area of tinnitus during the course of treatment, the higher the voice volume is subsequently in the areas above 5.3 kHz, i.e. in the formant range and above. It seems reasonable to assume a kind of biofeedback via hearing one's own voice. However, there could also be circular effects. For example, a resonant voice could have a retroactive effect on the ears via bone and air conduction, for example via the resonating muscles in the area of the ossicles or via neural connections in the area of the vagus nerve, which connects the activity of the vocal cords and hearing.

14.3.3 Stress-related results

According to the evaluation of the tinnitus questionnaire, all test subjects experienced an improvement in stress levels (with the exception of the test subject who had already scored 0 points on the stress scale before treatment). Stress levels were reduced by an average of just under a third compared to the initial value. The reduction in stress was evident in all areas covered by the questionnaire, but especially in the area of emotional stress.

In line with this, two-thirds of the test subjects (18/27) showed reduced sympathetic activity (SI value) in the HRV measurement after therapy. On average, this value decreased by just under a third for all test subjects. As expected, there was a significant positive correlation between the decrease in SI and the reduction in heart rate and a negative correlation between the increase in parasympathetic activity (RMSSD value) in the course of treatment – but only for non-musicians. In musicians, heart rate was independent of SI and RMSSD. This could be related to the fact that musicians have learned to respond to music with their heart rate, possibly even synchronising their heart rate and decoupling it as far as possible from stressful experiences, such as performance anxiety. This effect is likely to be particularly pronounced in singers and wind players, as absolute synchronisation between breathing and music is essential for them and the intensity and frequency of breathing is closely related to heart activity.

Before treatment, there is no discernible correlation between SI and RMSSD, but afterwards there is a clear negative correlation. It is not the case that at the beginning of treatment, when their stress levels are comparatively high, the test subjects have higher SI and lower RMSSD values in a balanced manner and that this finding would have reversed at the end of therapy. Instead, it can be seen that at the beginning, the SI and RMSSD values are not related to each other, and afterwards, regardless of how high one value is and how low the other is, they move in balance with each other.

In almost all test subjects (25/27), the relative voice volume increases in the range of 5.3–8.0 kHz, i.e. in the frequency range that characterises the sound of the voice (formant). The average increase in voice volume here is 6.7 dB. Comparable values can be found in the lower range of 3.0–5.3 kHz. In the other frequency ranges, the effect is weaker but still measurable.

There is a very clear correlation between the stress caused by tinnitus (documented in the tinnitus questionnaire) and this increase in intensity in the formant range of the voice. The lower the stress level, the more sonorous the voice; the higher the stress, the lower its intensity in this range. The correlation is very high at r=-0.60 and applies equally to the overall result and to the proportion of emotional stress in the questionnaire. The correlation is also evident for the other stress factors addressed in the tinnitus questionnaire. Interestingly, this correlation also applies only to non-musicians (r = 0.75); the effect is insignificant among musicians.

Musicians probably have both more opportunities and a greater interest in arbitrarily or involuntarily regulating their voice and in decoupling their voice from stress, for example in the form of performance anxiety. This ability is essential for singers.

PART 4: FURTHER DEVELOPMENT

15 Possible consequences for perception disorders in a broader sense

The fact that the correlations are usually much stronger after therapy than before, which seems to indicate better coordination between bodily functions, is probably significant far beyond the realm of hearing. This is evident, among other things, from the fact that the correlations found in the area of heart rate variability (as well as the correlations between voice frequency spectrum and hearing thresholds or tinnitus questionnaires) are also significantly stronger after therapy than before.

Apparently, the strength of these correlations provides information about the degree of health. The relationship between such values could therefore possibly be used in a before-and-after comparison for individual test subjects. It could also possibly be used as a guide when comparing the health development of test groups or population groups.

It can probably be said that healthy hearing is in a flexible balance at all times, while the hearing functions of tinnitus patients are comparatively rigid. The goal of tinnitus therapy would therefore not be to bring their hearing from a static state of hearing noise to a static state of silence, but to transform their hearing from a rigid, unregulated state to a flexible, self-regulating process.

The model of viewing tinnitus as a symptom of a rigid auditory regulatory system, which also takes possible traumatic triggers into account, can of course be applied to other disorders. Following the evaluation of the study results on tinnitus, I used interventions such as the "sound engineer with mixing desk" or the "reservoir" with clients who suffered from other perception disorders (in the broader sense). The following examples are not intended to provide evidence for the transferability of the results of this study to other symptom patterns. Nevertheless, they may encourage you to look for possible ways of transferring them to other areas.

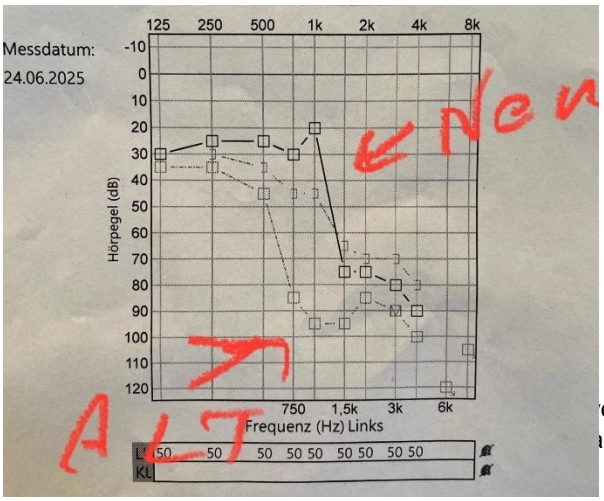
15.1 Sudden hearing loss

Some time after evaluating the measurement results for tinnitus therapy, a woman approached me with the concern that two days earlier, on 2 June 2025, she had "suffered severe sudden hearing loss with complete hearing loss on the left side, so far without tinnitus, and was seeking help". Her question was whether the issue could also be treated with hypnotherapy in parallel with medical treatment.

We worked on the issue twice for 90 minutes each time via video call. She said that her mother had died seven weeks ago and that she was now under a lot of stress for other reasons as well.
"physical and emotional stress". She feels like an "emergency manager" and is torn between anger and powerlessness.

After the sudden hearing loss, she first experienced three days of complete silence, then tinnitus set in. However, her interest was not in the noise in her ears, but in her hearing, which she wanted to restore.

In the first session, we worked with the "right-left conference", among other things, and in both sessions with the "sound engineer" and his "mixing console". She explained that there were five switches for the hearing threshold in different frequency ranges. We asked the sound engineer to operate the switches in an order of his choice; in between, we handed him a bottle of oil to lubricate the switches. When moving four of the five switches, she reported that the tinnitus had briefly "shot up" or become "shriller" and then subsided again – apparently a sign that the relative volume of the ear noises increased when the



hearing threshold decreased. The fact that the noises in her ears quickly became quiet again seems to me to indicate that although the hearing threshold and tinnitus are related, the brain is quite capable of readjusting the tinnitus when the hearing threshold changes.

Towards the end of the first session, the woman reported that the "ringing" in her ear, which had particularly bothered her and which she associated with hyperacusis, was now "gone".

On 24 June, immediately after the second session, she had a hearing test with an ENT specialist. esterday, the low frequencies were much better, which I ge documenting the change:

15.2 Polyneuropathy

A client asked whether hypnotherapy could help with the following issue: "I... have been living with 'skin problems' since I was born (in 1970). Even before I was a year old, I scratched my back until it bled. This has been a constant throughout my life. I have tried one thing or another time and again, and unfortunately I have usually only had short periods in which I was completely symptom-free. Lately, I have noticed that the 'worst' part of my current problems... stems from my almost reflexive scratching habits."

The disorder could be considered a variant of polyneuropathy, but it could also be interpreted as self-harming behaviour, although in my opinion both can be assumed at the same time. We worked together in two face-to-face sessions and two video calls, three 90-minute sessions and one 75-minute session. The first session resulted in a temporary improvement, the second in only a slight change, and the third and fourth in a more far-reaching and longer-lasting positive development.

During this treatment, I also explained the experiences from tinnitus therapy [235]and suggested inviting a "feeling technician" who could individually regulate the "feeling threshold" and body awareness in different parts of the body. I explained that the feeling technician could not only downregulate the itching, but also flip switches for a pleasant feeling of numbness. This second set of switches proved to be even more helpful than the first. The metaphor of a "reservoir" was also used to describe a state in which all previous experiences of itching had disappeared under an elevated feeling threshold.

15.3 Hyperosmia, hyposmia and anosmia

Similar to how neuropathic discomfort, pain and numbness show parallels to tinnitus or sudden hearing loss, the same is true for hyperosmia, hyposmia and anosmia.

Shortly before completing this work, a former seminar participant asked me for assistance:
"It's about being able to smell little to nothing – without any apparent medical

---

[235] Regarding the analogy between tinnitus or sudden hearing loss and neuropathy, see Chapter 10.3: "The analogy between tinnitus and neuropathic pain has already been the subject of extensive attention... [A] common feature is abnormal stimulus perception: allodynia and hyperalgia *[meaning: hyperalgesia]* in the case of neuropathic pain, and hyperacousia for tinnitus." Maudoux et al., 2007, p. 75, cf. Vincey et al., 1999, Moller, 2000, Folmer et al., 2001.

Reason. I would be delighted if we could work on this together soon – via Zoom, if you like." We worked on this issue for an hour and a half on 27 May and 24 June 2025.

I explained to her how I treat tinnitus and suggested that her "smell technician" could use a mixing console to work on making various smells available again. First, we tried rose scent, which she particularly wanted to smell again, with little to moderate success. Then we asked the scent technician to make the decisions. She chose herbs and spices. The client was able to smell the selected aromas and had the impression that this had not been possible before.

I suggested that smells were associated with emotions for her and that switching off smells helped her not to feel certain painful emotions that would otherwise have come with memories when smelling certain aromas. So we worked on decoupling the emotions from the smells.

As she was going on holiday, I asked her to do experiments with her smell technician during this time, always letting her decide which levers to pull. She could encourage her smell technician to be gradually more courageous, but should never push her to go further than she felt comfortable with. After the holiday, she reported that she had been surprised at how many smells she could perceive.

15.4 Allergy

If we view the immune system as a sensory system that, like sight, hearing, smell and touch, is fundamentally susceptible to trauma and then responds to key stimuli (triggers) from the time of traumatisation with hyper- or hypo-reactions, allergies and possibly other autoimmune diseases could potentially be influenced by similar approaches[236].

In March 2025, for example, a client asked me if we could use hypnotherapy to treat her hay fever, which caused severe itching in her eyes and throat. We worked with the subtraction, addition and transformation principles of therapeutic modelling, i.e. we visualised, personified and externalised people with allergic reactions. We described them, acknowledged their good intentions as "bodyguards" of their bodies, retrained them, observed how the client experienced and behaved differently physiologically when they were
were "outside" and stabilised any improvement. After 45 minutes, she was symptom-free. The change was extremely impressive, and I suggested that she go for a walk after the session and expose herself to the pollen. A few days later, she wrote:

After our conversation, I was feeling very optimistic and, as recommended, went for a walk. I had only been out for 20 minutes when I received a call informing me that my son had injured himself while climbing, and my husband and I drove him to the emergency room. Thankfully, it was 'only' an ankle injury. That means four weeks in a cast, his climbing holiday and our couple's holiday cancelled, etc., etc. In any case, since the call, the allergy symptoms have been even stronger than before. Can we please make another appointment? Somehow it seems to mean 'I'm stressed' or 'I've had enough'."

I wrote back: "That makes it... clear how allergies work as phobias or trigger reactions of the immune system. Say hello to your hay fever reactions, they have reason to be alarmed, just not about the pollen, but about the other things that have happened. And back when the hay fever first appeared, it was similar things that had alarmed you, which is why the pollen triggered the current experiences.

---

[236]Hammel 2017, p. 116f., Hammel, 2022, p. 28f., Unterberger et al., 2014, p. 23 ff., Sellam, 2006, p. 37ff., cf. Balon, 2006, Roy-Byrne et al., 2008, Goodwin et al., 2012, Chen et al., 2025

the same 'help, never again (like back then)' reaction as when your body first reacted to pollen and some things from back then were similarly alarming in a way."

In the following session, we incorporated the connection between stress and immune response into the treatment and were able to achieve a lasting result.

16 Conclusions and outlook

It has been shown that the hypnosystemic approach offered can be helpful for people with tinnitus on various levels and that the effectiveness of this approach can be confirmed using scientific methods. A multiple-goal approach has proven effective, focusing first on the subjective reduction of noise intensity, then on the suppression of noises, and finally on a more relaxed emotional response to them. A linear goal orientation in the sense of an offer such as "We will eliminate the noises!" seems inappropriate to me.

Tinnitus is not an isolated symptom, but part of complex control loops involving both hearing as a sensory function and the mental and emotional processing of what is heard. The psychological component should not be seen as a linear-causal consequence of the symptoms, but as a circular-causal (albeit not the only) cause and effect at the same time.

At this point, I would like to add a few personal thoughts. In a way, the failure of medicine to solve the problem of tinnitus symbolises society's failure to transition from a culture of fixed facts to a culture of interactive relationships as the basis for developing problem and solution models.

Linearity ("every problem has a cause"), duality ("the opposite of something good is something bad") and factuality ("it's either this way or that way") characterise this view of the world. Concepts of interdependence, circular and networked causality, and the idea of power relations that can stabilise or escalate until they finally come to rest in a different state of balance do not really belong in this view.

The mistake that makes chronic tinnitus seem incurable may lie in our view of the world and, accordingly, of our bodies, in a culture of maximising and minimising individual values rather than optimising the interaction of many values (which would mean consciously or unconsciously choosing between various possible optimisations).

In this sphere of interpretation, hearing appears static, like a complex machine that operates according to mechanics that are not entirely known to us. However, it can also be seen dynamically, like the climate or an ecosystem in which all elements are in constant motion relative to each other, like a network of control loops that are constantly balancing each other.

From this perspective, the goal of therapy would not be static silence, but a dynamic in which calm is the flip side of movement. A desirable goal would not be to achieve a fixed state, but to promote a high degree of flexibility with which the body regulates hearing – and, of course, our brain and nerve functions, our muscles, our emotions, our relationship to ourselves and the world around us.

16.1 Physiological

All test subjects experienced improvements on many levels of their experience during the course of the one-and-a-half-hour session working on their tinnitus symptoms and accompanying problems: improvements in hearing ability, a reduction in ear noises, a reduction in muscle tone (represented in the vibratory capacity of the vocal cords) and a

positive regulation of sympathetic nervous system activity. In addition to an immediate improvement in hearing, the data also indicates a reduction in stress levels.

With regard to a measurable improvement in hearing, there has been a lack of evidence for the effectiveness of hypnotherapeutic work. Many experts have disputed this effect.

For all test subjects, the tinnitus has become subjectively quieter. When its volume reaches a point below the hearing threshold, which was the case for three of our test subjects, the noise is described as "no longer there". In three test subjects, the tinnitus disappeared in the course of treatment. In addition, the ability to distinguish between the volumes and frequencies of different sounds has improved significantly.

Basically, our experiment shows that hypnosystemic treatment of tinnitus sufferers has an influence on the balance of hearing. As a rule, the objective volume of the noises and the hearing thresholds are changed in such a way that the relative volume of the tinnitus is also reduced. Even outside the range of the tinnitus frequency, the hearing thresholds of the test subjects improved significantly.

Significant changes can also be observed in the neurological processing of what is heard.

These differences are most noticeable in the primary, initial responses in the auditory cortex. However, they also become apparent in the later, increasingly conscious stages of processing.

Above all, a synchronisation of the responses to played tones in the right and left auditory cortex is striking. In addition, an amplification of the amplitudes of these reactions can be observed on both sides, especially on the right side.

Numerous significant correlations can be identified between the different areas of therapy-induced change, suggesting systemic connections.
significant correlations can be identified between the different areas of therapy-related change, suggesting systemic connections.

It is particularly striking that almost all significant correlations relate to the post-measurements. In the pre-measurements, the relevant correlations are insignificant or much weaker. **One of the main results of the therapy seems to be that bodily functions enter into a supra-individual normal relationship with each other. Whereas the bodily reactions were previously rather chaotic in relation to each other, they are now in a comparatively uniform relationship with each other.** The fact that the primary neurological responses of the right and left auditory cortex synchronise in the course of therapy seems to fit in well with this.

If connections that are essential for understanding tinnitus only become apparent after successful treatment and if, until now, there have been few promising treatments, this highlights a dilemma in research: **the goal is not to study diseased hearing, but to compare diseased and healthy hearing in the same group of people. Finding such a group has not been possible until now because no effective treatment for tinnitus was known.**

16.2 Psychotherapeutic

The positive effect of Ericksonian hypnotherapy, which forms the most important basis of hypnosystemic work, has been proven for some time now in terms of emotional relief[237]. The

[237] Maudoux et al., 2007, Yazici et al., 2012.

confirms the findings of various studies that hypnotherapeutic (in this case hypno-systemic) approaches reduce the psychological stress of many subjects with tinnitus.

The reduction in stress levels can be clearly demonstrated by the change in sympathetic nervous system activity and in the feedback provided by the subjects in the tinnitus questionnaire. The change in body tension is reflected in a significant expansion of the overtone spectrum when singing vowels after therapy compared to the vocal spectrum before therapy.

A distinction must be made between the stress experienced by those affected at the time of therapy or at times of increased emotional or acoustic stress and the stress experienced at the time of symptom onset.

A large proportion of tinnitus sufferers report conflictual or traumatic experiences at the time of symptom onset. They speak of "stress" at work or in their private relationships, or of challenges in both areas of life. Some have depressive tendencies, some are highly ambitious, and many are characterised by a constant striving for perfection (which could also be the result of a lack of unconditional acceptance in childhood). A more detailed medical history often reveals that although such aspects of the patient's biography and personality reached a peak at the time the symptoms began, they actually have a history dating back to early childhood and sometimes to earlier generations of the family.
A large proportion of tinnitus sufferers do not seem to think in terms of gradual or incremental change, but rather in terms of "all or nothing". The therapist's question:
When asked, "What has changed now?" many respond with, "The sound is still there," or, "I'm sorry, I'm probably a difficult case."

The rigidity that often manifests itself in the personality is reflected, in a sense, in a numbing of the hearing. Tinnitus can thus be understood as one of many ways in which chronic traumatic numbing manifests itself. The "freeze state" can not only cause the muscles to stiffen and the blood vessels to constrict, reducing body awareness, vision ("tunnel vision"), appetite and digestive ability, as well as emotionality, and causing cognitive and creative abilities to decline, it can also cause the dynamic balance that constitutes hearing to freeze.

Just as the physiological goal of therapy is to enable hearing that regulates itself in constant motion, so the psychotherapeutic goal is to enable an emotional experience that is dominated neither by overwhelming pain nor by dull numbness, but by a differentiated sense of changing moods. Both goals are interrelated.

One session of one and a half hours was required to achieve the measurable effects of the treatments mentioned above. It can be assumed that more far-reaching results can be achieved if several such sessions are carried out in succession.

"If something works, do more of it; if something doesn't work, do something else" is a systemic principle. The obvious assumption that continuing and expanding what works will generate even more desired results can apply both within a therapy and to the transfer of what has proven successful in several therapies. Interventions that I used more frequently in the study because they proved successful with many participants include, for example:

- The reservoir metaphor (10.3)
- Sound engineer and mixing desk (10.3)
- Master and apprentice (10.7)
- The right-left conference (10.7)
- Pulling tinnitus out of the ears (10.8)
- Visualising tinnitus and changing its shape, colour, orientation, etc. (10.8)
- Transforming tinnitus into emotions (10.10)

It is also legitimate to ask what "did not work" and what should be changed if the experiment is repeated. In therapeutic practice, I often ask about the hobbies, interests and beliefs of the test subjects. I then use this information for metaphors and examples in the context of therapy. This is also how I proceeded in the 2007 pilot study. In the current study, we did not ask about hobbies, interests and beliefs in advance, and I did not specifically address them at the beginning of the sessions (probably because I thought I had little time available). While in the 2007 study (with a very small group of subjects), half of the subjects became noise-free in one session, which is the most common case in my usual practice, here it was "only" one-ninth. I suspect that the targeted utilisation of individual experiences of subjects would contribute to significantly improving the results. If the experiment were to be repeated, I would gather even more information of this kind in advance.

16.3 Poimenisch

The question of therapeutic effectiveness must be distinguished from the practicality of implementing this approach in pastoral care work. In my opinion, this integrated physical and spiritual approach, which takes into account people's biographical, social and spiritual experiences, fits perfectly into a pastoral care practice based on the work of Jesus. At present, however, it should be noted that such an approach is probably not perceived as systemically relevant by most people in the church and society.

The separation of physical, psychotherapeutic and pastoral work in our society contributes to the fact that pastoral care is widely considered to be incompetent to offer physically understood healing.

Concepts that integrate physical healing into pastoral care have emerged locally in recent decades in the form of the laying on of hands, praying for healing and healing services; however, to my knowledge, there is no established practice of physical pastoral care that integrates psychotherapeutic and complementary medical concepts. Experiences of hypnosystemic physical pastoral care, as in the case studies mentioned at the beginning, arise sporadically from special situations, but are not yet anchored in the usual spectrum of church activities and are still the exception.

It is certainly possible to equip pastoral carers with the necessary skills to help people with tinnitus, for example, to reduce their symptoms. Such further training courses already exist and are used by pastoral carers[238]. After considering the diverse, interrelated, i.e. systemically interwoven, measurement results of this study, the question of how the separation of physical, mental, social, ecological and spiritual well-being can be realised in poimenics seems to me even more urgent than before.

Of course, it is possible to treat the emotional stress caused by tinnitus without reducing the noise itself or the accompanying hearing loss. It may be possible to reduce tinnitus without addressing the psychological and social stressors that contributed to its development. Certainly, it is possible to address the triggering stresses without addressing the meaning and purpose of life, acceptance and belonging, a fulfilled life and a peaceful death. But should all these things really have nothing to do with each other, and wouldn't it be better to look at them in conjunction with each other?

---

[238] Such further training courses include: "Words that work" in Berlin (www.coaching-kirche.de/hypnosystemische-seelsorge-ausbildung), "Hypnosystemic therapy" in Kaiserslautern and online (www.stefanhammel.de/seminare-hypnosystemische-ausbildung/die-ausbildung), "Hypnosystemic counselling" in Schwäbisch Hall (www.karinsautter-ott.de/termine) and "Hypnosystemic Concepts" in Austria/Switzerland (www.hypnosystemische-konzepte.com).

Of course, there is still a difference between the actions of individuals who incorporate such possibilities into their repertoire of actions and the actions of church or church-affiliated institutions.
One approach exists in Berlin, where hypnosystemic pastoral care training is based at the Institute for Culture and Religion at the Protestant University of Applied Sciences Berlin. Establishing such a physical and spiritual pastoral care practice on a broader scale could require pastoral carers to be legitimised by both the state system and the church to do their work. This would be possible for individual pastoral carers, for example, if pastors were licensed as alternative practitioners or if doctors with appropriate training were working in hospital or emergency pastoral care.

Whether and how church and community leaders, clinics or diaconal institutions would formally support a body-integrative hypnosystemic pastoral care practice is currently unclear, especially since it could be seen as competition within the existing range of medical services.

"He who has ears to hear, let him hear!" If the results of this work are heard, understood and utilised, they will open up new possibilities for the treatment of tinnitus and for research into ear noises. It remains to be seen who will seize this opportunity: research, medicine, psychotherapy, pastoral care? Time will tell which individuals or organisations want to, can and will make use of it, because:

"What is said is not yet heard, what is
heard is not yet understood,
understood is not yet agreed, agreed is not yet done,
done is not yet done right."[239]

[239] See note 17.

APPENDIX

17 Literature

Aazh H. (2025). Cognitive Behavioural Therapy (CBT) for Managing Tinnitus, Hyperacusis, and Misophonia: The 2025 Tonndorf Lecture. *Brain Sci. 19*;15(5): 526. doi: 10.3390/brainsci15050526.

Arsenault, V., Larouche, J., Désilets, M., Hudon, M. A., & Hudon, A. (2025). When the Mind Meets the Ear: A Scoping Review on Tinnitus and Clinically Measured Psychiatric Comorbidities. *J Clin Med., 14(11)*: *3785. doi: 10.3390/jcm14113785*

Asnis, G. M., Henderson, M., Sylvester, C., Thomas, M., Kira, M., & Richard De La G. (2021). Insomnia in Tinnitus Patients: A Prospective Study Finding a Significant Relationship. *Int Tinnitus J. 24*: 65–69. doi: 10.5935/0946-5448.20200010

Association France Acouphène (2017). *Tinnitus, hyperacusis, Ménière's disease, acoustic neuroma: The reference book with practical advice and solutions.* Josette Lyon.

Balon, R. (2006). Mood, anxiety, and physical illness. Body and mind, or mind and body? *Depress Anxiety, 23*(6): 377-387.

Bartens, W. (2011, 13 January). *Tinnitus: The great noise.* In: Süddeutsche Zeitung, http://sueddeutsche.de/wissen/tinnitus-das-grosse-rauschen-1.1045853. Retrieved on 31 July 2025.

Benner, J., Reinhardt, J., Christiner, M., Wengenroth, M., Stippich, C., Schneider, P., & Blatow, M. (2023). Temporal hierarchy of cortical responses reflects core-belt-parabelt organisation of auditory cortex in musicians. *Cerebral Cortex*, *33*(11): 7044-7060. doi: 10.1093/cercor/bhad020

Bible Society (2017). *The Bible. Based on Martin Luther's translation.* Revised in 2017.

Biswas, R., & Hall, A. (2021). Prevalence, incidence, and risk factors for tinnitus. *Curr Top Behav Neurosci 51*: 3-28. doi: 10.1007/7854_2020_154

Bo, L., Forti, S., Ambrosetti, U., Serena, D., Mauro, D., Ugazio, G., & Mancuso, A. (2008). Tinnitus aurium in persons with normal hearing: 55 years later. *Otolaryngol Head Neck Surg*. *139*(3): 391-394. doi: 10.1016/j.otohns.2008.06.019

Boecking B, & Mazurek B. (2025). Chronic tinnitus from a psychological perspective. *ENT. 73*(6): 367-381. doi: 10.1007/s00106-025-01586-4

Brennecke, A. (2023). *Meaning as a system. Observations on pastoral care*. Dissertation. Paderborn

Burns-O'Connell, G., Stockdale, D., Cassidy, O., Knowles, V., & Hoare, D. (2021). Surrounded by Sound: The Impact of Tinnitus on Musicians. *Int J Environ Res Public Health. 27*;18(17):9036. doi: 10.3390/ijerph18179036

Cacace, A. (2003). Expanding the biological basis of tinnitus: crossmodal origins and the role of neuroplasticity. *Hear Res. 175*(1-2):112-132. doi: 10.1016/s0378-5955(02)00717-7

Chen, Y., Cai, H., Ye, X., Zhu, G., Song, Y., Abuduxukuer, Z., Lu, C., Zeng, Y., Peng, W., Chen, H., Jin, M. (2025). Association of depression, anxiety with asthma outcomes and allergic comorbidities: results from the National Health Interview Survey. *J Affective Disord. 389*: 119677. doi: 10.1016/j.jad.2025.119677

Clifford, R.E., Baker, D., Risbrough, V.B., Huang, M., & Yurgil, K.A. (2019). Impact of TBI, PTSD, and Hearing Loss on Tinnitus Progression in a US Marine Cohort. *Mil Med. 1*;184(11-12): 839-846. doi: 10.1093/milmed/usz016

Crossan, D. (2012). *The power of parable: How fiction by Jesus became fiction about Jesus*. SPCK.

D'Amelio, R., Kranz, D., & Schaaf, H. (2021). *Modules for tinnitus treatment: counselling, psychoeducation and psychotherapy*. Hogrefe.

De Gruy, J., Laurenzo, W., Vu, T., Paul, O., Lee, C., & Spankovich, C. (2024). Prevalence and predictors of problematic tinnitus. *Int J Audiol. 64*(4): 307-313. doi: 10.1080/14992027.2024.2378804

Dawes, P., Newall, J., Stockdale, D., & Baguley, M. (2020). Natural history of tinnitus in adults: A cross-sectional and longitudinal analysis. *BMJ Open* 10: e041290. doi: 10.1136/bmjopen-2020-041290

Djalilian, H., & Abouzari, M. (Ed.) (2025). *Tinnitus. New Therapeutic Tools and Techniques*. World Scientific.

Domanski, J.-O. (2022). *Words that work: Introduction to hypnosystemic pastoral care*. Gütersloher. Domanski, J.-O.

(2024). Hypnosystemic pastoral care: Words that work. In P. Stimpfle (Ed.),
Hypnosystemic Approaches to Therapy and Counselling. Appetisers that whet your appetite for the sea. tredition, pp. 395-398.

Domanski, J.-O. (2025). On the way to hypnosystemic pastoral care: What hypnosystemic concepts contribute to the theory and practice of pastoral care. *Wege zum Menschen* 77, 4/25, pp. 282-295.

Education and Teaching (1991). Austrian Federal Publishing House.

Emlein, G. (2017). *The Meaning System of Pastoral Care: A Study on the Question: Who Does What When You Say You Care About the Soul?* Vandenhoeck.

Erickson, M., & Rossi, E. (1979). *Hypnotherapy: An Exploratory Casebook.* New York: Irvington.

Erickson, M., & Rossi, E. (2001). *Hypnotherapy: Structure, Examples, Research.* Klett-Cotta.

Fagelson, M. (2007). The association between tinnitus and posttraumatic stress disorder. *Am J Audiol. 16*(2):107-117. doi: 10.1044/1059-0889(2007/015)

Folmer, L., Griest, E., & Martin, W. (2001). Chronic tinnitus as phantom auditory pain. *Otolaryngol Head Neck Surg. 124*: 394-400. doi: 10.1067/mhn.2001.114673

Geocze, L., Mucci, S, Abranches, D., Marco, M., & Penido, N. (2013) Systematic review on the evidences of an association between tinnitus and depression. *Braz J Otorhinolaryngol*. 79(1):106-11. doi: 10.5935/1808-8694.20130018

Gnilka, J. (2010). *The Gospel according to Mark: Part 1: Mk 1:1-8:26. Part 2: Mk 6:27-16:20* (1st edition of the study edition). Neukirchener.

Goebel, G. (2003). *Tinnitus and hyperacusis*. Hogrefe.

Goebel, G., & Hiller, W. (1998). *Tinnitus questionnaire: A tool for assessing the burden and severity of tinnitus*. Hogrefe.

Goebel, G., & Thora, C. (2018). *Guide to tinnitus and hyperacusis: Information for sufferers and their families*. Hogrefe.

Goodwin, R., Galea, S., Perzanowski, M., Jacobi, F. (2012). Impact of allergy treatment on the association between allergies and mood and anxiety in a population sample. *Clin Exp Allergy. 42*(12):1765-71. doi: 10.1111/j.1365-2222.2012.04042.x

Griffith, H., & Thompson, H. (1904). *The Demoticus Magical Papyrus of London and Leiden*. Clarendon

Grinder, J., & Bandler, R. (1981). *Therapy in Trance: Neurolinguistic Programming (NLP) and the Structure of Hypnotic Communication*. Klett-Cotta.

Gross, M., & Popper, V. (2020). *And the mouse hears a noise: Hypnosystemic experience in therapy, coaching and counselling*. Carl Auer

Grundmann, W. (1989). *The Gospel According to Mark (*10th ed.), Evangelische Verlagsanstalt.

Hagen, T., Groß, N., Jacobs, W., Seidl., C. (Eds.) (2017). *Pastoral care in hospitals and healthcare: Mission – Networking – Perspectives.* Herder.

Hammel, S. (2006). *The blade of grass in the desert: Stories and metaphors in counselling, therapy and pastoral care.* impress.

Hammel (2007). *Is Tinnitus hypnotically influenced by hypnosis? A pilot study.* www.hsb-westpfalz.de/tinnitusversuch0, accessed 23 June 2025.

Hammel, S. (2009a). *Handbook of therapeutic storytelling: Stories and metaphors in psychotherapy, child and family therapy, medicine, coaching and supervision*. Klett-Cotta.

Hammel, S. (2009b). Tinnitus therapy through hypnosis: The Heidelberg pilot study. *Musica Sacra*, 04/09, 223-226.

Hammel, S. (2011). *Handbook of Therapeutic Utilisation: On the Usefulness of the Useless in Psychotherapy, Child and Family Therapy, Medicine and Counselling*. Klett-Cotta.

Hammel, S. (2012a). Metaphor. In: J. V. Wirth & H. Kleve (Eds.). *Encyclopaedia of Systemic Work: Basic Concepts of Systemic Practice, Methodology and Theory*. Carl Auer, pp. 264–267.

Hammel, S. (2012b). Utilisation. In: J. V. Wirth & H. Kleve (Eds.). *Encyclopaedia of Systemic Work: Basic Concepts of Systemic Practice, Methodology and Theory*. Carl Auer, pp. 441–444.

Hammel, S. (2014). *Therapy between the lines: The unspoken spoken in counselling, therapy and medicine.* Klett-Cotta.

Hammel, S. (2016). *Everything Reframed!: Psychological Symptoms from an Unusual Perspective.* Ernst Reinhardt.

Hammel, S. (2017). *Greet your soul!: Therapeutic interventions in three sentences*. Klett-Cotta.

Hammel, S. (2019a). *Discovering life opportunities: Change through therapeutic modelling.* Klett-Cotta.

Hammel (2019b). *Hypnosystemic therapy for tinnitus and sudden hearing loss: Two demo therapies and an interview.* Video stream, hsb westpfalz. shop.stefanhammel.de/startseite/therapie-videos

Hammel (2020). *The sound of silence. Therapeutic hypnosis for tinnitus, sudden hearing loss, hyperacusis and other forms of hearing impairment,* audio stream. hsb westpfalz. shop.stefanhammel.de/startseite/hypnose-h%C3%B6rdatei

Hammel, S. (2022). *Hypnosystemic Therapy: The Handbook for Practice.* Klett-Cotta. Hammel, S. (2024).

Learning Therapeutic Storytelling. *An Overview of the Most Important Points*. Springer.

Hammel, S., Hürzeler, A., Lamprecht, K., & Niedermann, M. (2015). *How the crocodile came to fly: 120 stories that change your life*. Ernst Reinhardt.

Hammel, S., Hürzeler, A., Lamprecht, K., & Niedermann, M. (2018). *How the bear came to dance: 120 stories for a healthy body.* Ernst Reinhardt.

Hammel, S., Hürzeler, A., Lamprecht, K., & Niedermann, M. (2021). *How the tiger learned to love: 120 stories about dealing with psychological trauma.* Ernst Reinhardt.

Hammel, S., Hürzeler, A., Lamprecht, K., & Niedermann, M. (2023). *How the rhinoceros found freedom: 120 stories about dealing with crises.* Ernst Reinhardt.

Hammel, S., Hürzeler, A., Lamprecht, K., & Niedermann, M. (2026). *How the stork stayed at home: 120 stories about home and foreign lands.* Ernst Reinhardt.

Hammel, S., Vlamynck, A, & Weinspach, C. (2020). *Demystifying fears – finding joy in life: The best interventions from 9 therapeutic approaches.* Klett-Cotta.

Hartmann, A. (2020). *Hypnosis Online Masterclass: Recording.* www.youtube.com/watch?v=YIeEthDpMfM&t=1210s, accessed 4 January 2025.

Hobeika, L., Fillingim, M., Tanguay-Sabourin, C., Roy, M., Londero, A., Samson, S., & Vachon-Presseau, E. (2025). Tinnitus risk factors and its evolution over time. *Nat Commun.*, *16*(1): 4244. doi: 10.1038/s41467-025-59445-3

Hullmann, I. (2025). *Hypnosystemically effective: Impact methods for practice.* Schattauer.

Jaynes, J. (1988). *The origin of consciousness through the breakdown of the bicameral mind*. Hamburg, Rowohlt.

Jungbauer, J., & Stelling, K. (2024). Mindfulness in psychotherapy and counselling: A path to spiritual growth and mental health. In: R. Krockauer & J. Jungbauer (Eds.), *Spirituality and self-care: Time for what sustains us. Interdisciplinary contributions,* pp. 58-80. Barbara Budrich.

Kachler, R. (2010). *Hypnosystemic grief counselling: A guide for practice.* Carl Auer.

Kachler, R. (2018). *Catching up on grief work: Hypnosystemic counselling and therapy for early losses.* Carl Auer.

Kachler, R. (2021). *Traumatic Losses: Hypnosystemic Work with Traumatised Bereaved People: A Guide for Practice.* Carl Auer.

Klaiber, W. (2010). *The Gospel of Mark*. Neukirchener.

Klaiber, W. (2015). *The Gospel of Matthew. Part 1: Mt 1:1-16:20*. Neukirchener.

Kleinjung, T., Peter, N., Schecklmann, M., & Langguth, B. (2024). The Current State of Tinnitus Diagnosis and Treatment: a Multidisciplinary Expert Perspective. *J Assoc Res Otolaryngol. 25*(5): 413-425. doi: 10.1007/s10162-024-00960-3

Knoch, O. (1993). *Whoever has ears, let them hear – The message of Jesus' parables: Workbook on the Bible.* Catholic Bible Society.

Kranz, D. (2017). *Hypnotherapy for tinnitus: A practical guide.* Hogrefe.

Krieghofer, G. (2020)www.falschzitate.blogspot.com/2020/06/gedacht-ist-nicht-gesagt-gesagt-ist.html , accessed 18 June 2025.

Kok, T., Domingo, D., Hassan, J., Vuong, A., Hordacre, B., Clark, C., Katrakazas, P., & Shekhawat, G. (2022). Resting-state Networks in Tinnitus: A Scoping Review. *Clin Neuroradiol. 32*(4): 903-922. doi: 10.1007/s00062-022-01170-1

Korzybski, A. (1994). *Science and Sanity: An Introduction to Non-Aristotelian Systems and General Semantics* (5th ed.). Institute of General Semantics.

Lamprecht, K. (2020). *The Racing Turtle: 31 Therapeutic Stories for Children.* Ernst Reinhardt.

Langguth, B., de Ridder, D., Schlee, W., & Kleinjung, T. (2024) Tinnitus: Clinical Insights into Its Pathophysiology – A Perspective. *J Assoc Res Otolaryngol. 25*(3): 249-258. doi: 10.1007/s10162-024-00939-0

Leeb, W. A., Trenkle, B., & Weckenmann, M. (Eds.) (2025). *The Reality Waiter: Hypnosystemic Concepts in Counselling, Coaching and Supervision*. Carl Auer

Lincoln, U. (2014). *Theology and Listening*. Mohr.

Luz, U. (2016). *The Gospel According to Matthew: Mt 8–17. Part 2* (6th ed.). Neukirchener. Maier, G.

(2018). *The Revelation of John: Chapters 1–11* (4th ed.). Brockhaus.

Maihoub, S., Mavrogeni, P., Molnár, V., & Molnár, A. (2025). Tinnitus and its comorbidities: a comprehensive analysis of their relationships. *J. Clin Med.*, *14*(4): 1285. doi: 10.3390/jcm14041285

Maudoux, A., Bonnet, B., Lhonneux-Ledoux, F., & Lefebvre, P. (2007). Ericksonian hypnosis in tinnitus therapy. *B-ENT 3*, Suppl. 7: 75-77. PMID: 18225612

Mazurek, B., Hesse, G., Sattel, H., Kratzsch, V., Lahmann, C., & Dobel, C. (2022). S3 Guideline: Chronic Tinnitus: German Society for Otorhinolaryngology, Head and Neck Surgery e. V. (DGHNO-KHC). *HNO. 70(*11): 795-827. doi: 10.1007/s00106-022-01207-4

Meiss, O. (n.d.). *The psycho-physiology of hearing*.www.ortwinmeiss.de/pdf/Die%20Psychologie%20des%20H%C3%B6rens.pdf , accessed 6 December 2024

Meiss, O. (2016). *Hypnosystemic therapy for depression and burnout*. Carl Auer.

Meyer-Erben, C., & Zander-Schreindorfer, U. (2021). *Working with hypnosystemic therapy: a short practical guide*. Vandenhoeck

Moller, A.R. (2000). Similarities between severe tinnitus and chronic pain. *J Am Acad Audiol. 11*: 115-124. PMID: 10755808

Morgenthaler, C. (1999). *Systemic pastoral care: impulses from family and systemic therapy for church practice*. Kohlhammer.

Moring, J., Peterson, A., & Kanzler, K. (2018). Tinnitus, Traumatic Brain Injury, and Posttraumatic Stress Disorder in the Military. *Int J Behav Med. 25*(3): 312-321. doi: 10.1007/s12529-017-9702-z

Nowak, A. (2024). *Letting go of tinnitus: Applying the latest findings from brain research.* Trias. Ohresser, M. (2017). *Les*

Acouphènes: Diagnostic, Prise En Charge Et Thérapeutique. Elsevier-Mason.

Olderog, M., Langenbach, M., Michel, O., Brusis, T., & Kohle, K. (2004). Predictors and mechanisms of the lack of tinnitus tolerance development: A longitudinal study. *Laryngorhinootologie 83*: 5-13. doi: 10.1055/s-2004-814235

Peyton, S. (2019). *Self-resonance – In harmony with yourself and your life: Insights from neurobiology, NVC and trauma research.* Junfermann.

Ross, U. (2006). Systems science aspects of tinnitus therapy. *Swiss Journal of Holistic Medicine*. *19(*7-8): 373-379. doi: 10.1159/000286001

Ross, U. (2024). *Tinnitus is not the problem: Living well with modern hypnosis.* Carl Auer.

Ross, U., Lange, O., Unterrainer, J., & Laszig, R. (2007). Ericksonian hypnosis in tinnitus therapy: effects of a 28-day inpatient multimodal treatment concept measured by Tinnitus Questionnaire and Health Survey SF-36. *Eur Arch Otorhinolaryngol 264*: 483-488. doi: 10.1007/s00405-006-0221-9

Sanchez, T., Valim, C., & Schlee, W. (2021). Long-lasting total remission of tinnitus: A systematic collection of cases. *Prog Brain Res. 260*: 269-282. doi: 10.1016/bs.pbr.2020.05.023

Roy-Byrne, P., Davidson, K., Kessler, R., Asmundson, G., Goodwin, R., Kubzansky, L., Lydiard, R., Massie, M., Katon, W., Laden, S., Stein, M. (2008). Anxiety disorders and comorbid medical illness. *Gen Hosp Psychiatry 30*(3): 208-225. doi: 10.1016/j.genhosppsych.2007.12.006.

Saus, W., Seither-Preisler A., & Schneider P (2025). Harmonic vowels and neural dynamics: MEG evidence for auditory resonance integration in singing*. Front Neurosci. 19*:1625403. doi: 10.3389/fnins.2025.1625403

Schaaf, H. (2017). What hypnotherapists should know about suffering from tinnitus – necessary basic medical knowledge. In: D. Kranz, *Hypnotherapy for tinnitus: A practical guide.* Hogrefe, pp. 27-40

Scherg, M., Vajsar, J., & Picton, T. (1989). A source analysis of the late human auditory evoked potentials. *J Cogn Neurosci. 1*(4): 336-355. doi: 10.1162/jocn.1989.1.4.336

Schmidt, G. (2004). *Love affairs between problem and solution: Hypnosystemic work in difficult contexts.* Carl Auer.

Schmidt, G. (2005). *Introduction to hypnosystemic therapy and counselling.* Carl Auer.

Schmidt, G. (2024). Some thoughts on the original hypnosystemic approach. In: P. Stimpfle (ed.), *Hypnosystemic approaches to therapy and counselling. Appetisers that whet your appetite for more.* tredition, pp. 22-47.

Schmitz, B. (2022). *The Gospel of Mark – Read from a Religious Studies Perspective.* Tectum.

Schneider, P. (2009). Music sung by angels: The development and causes of tinnitus and noise sensitivity in church musicians, choir directors, wind instrument players and singers. *Musica Sacra* 04/09, pp. 220–222.

Schneider, P., Scherg, M., Dosch, H. G., Specht, H. J., Gutschalk, A., & Rupp, A. (2002). Morphology of Heschl's gyrus reflects enhanced activation in the auditory cortex of musicians. *Nat Neurosci 5*(7): 688-694. doi: 10.1038/nn871

Schneider, P., Sluming, V., Roberts, N., Scherg, M., Goebel, R., Specht, H., Dosch, G., Bleeck, S., Stippich, C., & Rupp, A. (2005). Structural and functional asymmetry of lateral Heschl's gyrus reflects pitch perception preference. *Nat Neurosci 8*: 1241-1247. doi: 10.1038/nn1530

Schneider, P., Andermann, M., Wengenroth, M., Goebel, R., Flor, H., Rupp, A., & Diesch, E. (2009). Reduced volume of Heschl's gyrus in tinnitus. *Neuroimage 45*(3): 927-939. doi:10.1016/j.neuroimage.2008.12.045

Schneider, P., Groß, C., Bernhofs, V., Christiner, M., Benner, J., Turker, S., Zeidler, B.M., & Seither-Preisler, A. (2022). Short-term plasticity of neuro-auditory processing induced by musical active listening training. *Ann N Y Acad Sci. 1517*(1): 176-190. doi: 10.1111/nyas.14899.

Schneider, P., Engelmann, D., Groß, C., Bernhofs, V., Hofmann, E., Christiner, M., Benner, J., Bücher, S., Ludwig, A., Serrallach, B. L., Zeidler, B. M., Turker, S., Parncutt, R, & Seither-Preisler, A.(2023). Neuroanatomical Disposition, Natural Development, and Training-Induced Plasticity of the Human Auditory System from Childhood to Adulthood: A 12-Year Study in Musicians and Nonmusicians. *J Neurosci. 13*;43(37): 6430-6446. doi: 10.1523/JNEUROSCI.0274-23.2023

Schroeter-Wittke, H. (2000) *Conversation: Practical theological excursions into homiletic and cultural use of the Bible in the 19th and 20th centuries based on the figure of Elijah*. Peter Lang

Schroeter-Wittke, H. (2009a). Listening – theological hermeneutics of popular listening worlds. In: J. Kunstmann & I. Reuter (Eds.), *Sinnspiegel. Theological hermeneutics of popular culture.* Schöningh, pp. 95–110.

Schroeter-Wittke, H. (2009b). "Zur Recreation des Gemüths" – Music as pastoral care. In D. Bell & D. Fermor (Eds.), *Pastoral care today. Current perspectives from theory and practice,* Neukirchener, pp. 149–165.

Schroeter-Wittke, H. (2017a). Listening. In: M. Blohm, A. Brenne, & S. Hornäk (Eds.), *Somehow different: Aspects of inclusion in the arts and aesthetic education.* fabrico, pp. 139–144.

Schroeter-Wittke, H. (2017b) Wer Ohren hat zu hören, der höre. *Praktische Theologie* 52/1, pp. 56–57. doi: 10.14315/prth-2017-0111

Sedley, W. (2019). Tinnitus: does gain explain? *Neuroscience 407* : 213-228. doi: 10.1016/j.neuroscience.2019.01.027

Sellam, S. (2006). *Allergies: It's simpler than you think*. Bérangel.

Serres, M. (1998). *The five senses. A philosophy of mixtures and blends*. Suhrkamp.

Short, D., & Weinspach, C. (2007). *Hope and resilience: Therapeutic strategies of Milton H. Erickson.* Carl Auer.

Smith, S., Jahn, K., Sugai, J., Hancock, K., & Polley, D.. (2025). Objective autonomic signatures of tinnitus and sound sensitivity disorders. *Science Translational Medicine*, *17*(796), eadp1934. 10.1101/2023.12.22.571929

Söding, T. (2022). *The Gospel According to Mark.* Evangelische Verlagsanstalt.

Steiner (2012). *Ringing in the ears and voices of gods: A cultural history of tinnitus.* Wilhelm Fink.

Steinriede, R. (2002). *Medical Hypnosis for Tinnitus and Sudden Hearing Loss: With a contribution on the basics of therapeutic hypnosis by Dirk Revenstorf.* Carl Auer.

Steinriede, R. (2009). Tinnitus and sudden hearing loss. In: D. Revenstorf & B. Peter (Eds.). *Hypnosis in psychotherapy, psychosomatics and medicine: Manual for practice* (2nd ed.). Springer, pp. 704-722.

Stollberg, D. (1969). Pastoral care and psychotherapy – two paths, one goal? *Pth 58*: 396-405.

Stollberg, D. (1972). *My mission – your freedom: Pastoral care is psychotherapy in a church context*. Claudius.

Streib, H. (1996). Healing Narratives. Pastoral-Theological and Pastoral-Psychological Perspectives on the Foundations and Structure of Pastoral Care. *Wege zum Menschen*, *48*(6): 339–359.

Tillich, P. (1958). The Theology of Pastoral Care: *The Spiritual and Theological Foundations of Pastoral Care.* Advisory Committee on Clinical Pastoral Education

Unterberger, G., Wilcke, I., & Witt, K. (2014). *Treating allergies mentally. So that mind and body can respond appropriately again – models and strategies of applied psychoneuroimmunology*. Psymed.

Vielsmeier V., Santiago Stiel R., Kwok, P., Langguth, B, & Schecklmann, A. (2020). From acute to chronic tinnitus: Pilot data on predictors and progression. *Front. Neurol. 11*: 997. doi: 10.3389/fneur.2020.00997

Vincey, P., Filippini, J., Ducourneau, A., Patuano, E., Mathias, A., Gal, M., & Gresillon, N. (1999). Comparison of tinnitus and pain. *Rev Laryngol Otol Rhinol (Bord) 120*(5): 323-326.

Webb, S. (2012). *The Divine Voice: Christian Proclamation and the Theology of Sound*. Wipf & Stock.

Weise, C., Kleinstäuber, M., Kaldo V., Andersson, G. (2016). *Learning to live with tinnitus: A manual for therapists and sufferers.* Springer

Wolter, M. (2008). *The Gospel of Luke*. Mohr Siebeck.

Yazici, Z., Sayin, I., Gökkus, G., Alatas, E., Kaya, H., & Kayhan, F. (2012). Effectiveness of Ericksonian hypnosis in tinnitus therapy: preliminary results. *B-ENT* 8: 7-11.

Zeig, J. (1982). *Ericksonian Approaches to Hypnosis and Psychotherapy*. Brunner.

Zeig, J (1998). *Procrustean beds*.www.behavior.net/forums/ericksonian/1997/msg199.html , accessed 2 January 2025.

Acknowledgements

Work such as this would not be possible without the cooperation of others. I would like to express my

sincere thanks to Prof. Peter Schneider from Heidelberg for his collegial
cooperation and valuable advice in planning the measurements, assisting with the neurological and audiological measurements, and statistically evaluating the results.

I would also like to thank Jean-Otto Domanski, Dr Caroline Bialon, Prof. Chantal Berna Renella and Dr Astrid Vlamynck for their expert advice from a theological, medical and psychotherapeutic perspective.

I would like to express my sincere thanks to Karine Audeguy, who carried out the HRV measurements and tinnitus volume scaling and looked after the test subjects who came to Kaiserslautern for measurement and therapy.

I would also like to thank Marita Schuff, who repeatedly took care of entering and updating test subject data.

Declaration

I hereby declare, in accordance with §12 of the doctoral regulations,

- that the submitted work was completed independently and without the use of any aids other than those specified in the work,
- that the thesis has not previously been submitted in the same or a similar form to any other examination authority either in Germany or abroad, and
- that no doctoral procedure has been applied for at another university or faculty either previously or simultaneously with this application.

Kaiserslautern, on...