



ADDITIONAL EFFECTS OF MULTISENSORY PERCEPTION OF MUSIC WITH A VIBROACOUSTIC MAT TO PURE LISTENING OF MUSIC

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Abstract

Since the beginning of time sound and music played an essential role for the entire evolution. The sound therapy treated patients already by hearing and feeling (vibration) since ancient times. The investigation is to demonstrate the effects of music with special user-related design to human organism only by listening in comparison to the whole body treatment with the music via a vibroacoustic mat*.

These occur on two issues. Is the experience of music more intense by simultaneously hearing and feeling via a vibroacoustic mat than by pure listening? Does the additional vibroacoustic effect cause significant decrease of stress condition to the music consumer?

The hypothesis of the study is as follows: Multisensory perception of music via a vibroacoustic mat makes the music consumer experience music more intensely. In particular a significant reduction of the individual stress state can be effected.

The study design was as follows. 20 probands experienced special created music on the basis of standardized conditions. With an interval of 7 days the subjects experienced music only by listening and by listening&feeling on the vibroacoustic mat.

Methods for the investigation were a modified SF12-core health status to evaluate mood symptoms and common status and the Voice-Frequency-Analysis (VFA acc. to Heinen) to control stress parameters and changes in personality profiles.

The results from SF12 and VFA correlated significantly. As conclusion it can be said that on the one hand music has been experienced more intensely by multisensory application. The simultaneous listening and feeling of music via a vibroacoustic mat did not effect a significant reduction in common stress state of the music consumers.

Background

Since the beginning of time sound & music played an essential role for the entire evolution. The sound therapy treated patients already by hearing and feeling (vibration) since ancient times. Already Homer, in the Old Testament - think of the "treatment" of depression of Saul by playing the harp by David - and in many other sources can be find relevant informations.

When using modern vibrating rhythm mats, on which to be played respective specifically user-generated sounds, patients notice to experience a pure musical enjoyment alongside a whole body treatment.

The investigation is to demonstrate the effects of music with special user-related design to human organism only by listening in comparison to the whole body treatment with the music via a vibroacoustic mat*. With this mat it is possible to feel the music simultaneously which is listened over headphones.

Object

Is the experience of music more intense by simultaneously listening and feeling via a vibroacoustic mat than by pure listening? Does the additional vibroacoustic effect cause significant decrease of stress condition to the music consumer?

Thesis

Multisensory perception of music via a vibroacoustic mat makes the music consumer experience more intensely. In particular a significant reduction of the individual stress state can be effected.

Design of study

20 probands experienced special created music on the basis of standardized conditions. 13 women and 7 men, aged between 16 and 42 years, took part in each two times on the investigation within an interval of 7 days. So it was also referred to the individual weekly personal basis rhythm. To control any learning effects, 10 test persons committed to listening, and 10 with listening and feeling on the vibroacoustic mat. Thus a therapeutic effect was compensated.

The music was a 14 minute compilation of two, for the test persons unknown, instrumental chillout songs. Consequently, it was avoided that the test subjects built up any emotional links to the songs. A CD player ran the audio signal to a headphone amplifier. From there the headphone signal and the vibroacoustic mat signal could be set individually.

Before and after each round, the participants had to complete a standardized questionnaire and carry out a voice recording for the Voice-Frequency-Analysis (VFA, see below).

Methods

- A modified SF12-core health status was created to evaluate mood symptoms and common status. The most important 3 questions for the study, and included in the statistical analysis, related to the current excitement, mood and tension of the participants. All these questions had the same five structured response options, in meaning of - very positive – positive – neutral - negative - very negative.

This sensation levels were similar numbering 1 to 5 (1 = very positive, 5 = very negative) and could be recorded numerically in the evaluation. As uniform a basis for all evaluable sensations was created.

It was also determined before and after each round heart rate and blood pressure of the subjects. The current perception of time of each round was also requested.

-Voice-Frequency-Analysis (VFA acc. to Heinen). With the VFA it is possible to determine different stress-, fear-, aggression- and tension-states as well as changes in personality profiles.

Similar to the five possible answers in the questionnaires, five different divisions in the parameters of the VFA were made. For example the five different states of fear: 1 = normal fear, 2 = stressful fear, 3 = overload fear, 4 = disabling fear, 5 = inhibiting or debilitating fear

Consequently, a common statistical analysis of each parameter was possible.

Result

- In relation to the more intense experience of Listen & Feel

All study participants felt well during the passages and in particular on the mat. Only two subjects were familiar with the two songs. Per round 280 minutes of music has been played. In round listen the participants estimated a total playing time of 240 minutes, average 12.00 minutes. In round listen & feel the participants estimated a total duration of 248 minutes, average 12.40 minutes. The result is a tendency in such a way that when music is listening and feeling, music can be felt longer. Thus can be felt or experienced intense.

The participants described listening and feeling in many different positive ways. For example, great massage feeling, immersed in the music, bass experience, two senses at once, combining charm, enveloped by sound, music experience reinforced feelings or intense musical experience.

A test subject experienced a very large and deep gratitude. As a result, they even had to cry. Another person described, for their not normal, conscious timekeeper for this particular music experience as an enormously positive value. It was compared with a spa unit. A lot of stress in the exercise of their profession and tensions in the family lead to the fact that very rarely time for rest and relaxation is available.

After the passage Listen & Feel a test subject described, when they go to bed every evening she grinds his teeth. This was „taken off“ by the mat this time and the jaw was relaxed. This test subject even felt into sleep at the end of the round.

Several subjects described a faster "shut down" with this special musical experience (listen&feel). It does not need (acquired-) time to give oneself up to the music experience. From the beginning one is fully satisfied of the music and could plunge straight into the experience.

When asked if the music was experienced more intensively with the mat as without, all study participants responded with yes. Whether they would do this music experience on this way more often, also all answered with yes.

Already aware of focusing on a musical experience, many test subjects provided as an added value, that has been reinforced through the use of the vibroacoustic mat. To make time consciously (as it did for sports, reading and/or other recreational activities) and to consume music in this context, leads to an increased awareness. The sound and vibration caused by the mat, increased in some study participants continued well-being, which was seen as a "relaxation" and "deceleration".

Described by the statements and the clear result of the question about the intensity of the experience with the vibroacoustic mat in round Listen&Feel the following conclusion can be drawn:

Music can be experienced more intense through multisensory perception with a vibroacoustic mat by simultaneously listening and feeling.

- in relation to significant decrease of individual stress state

What is to be mentioned first, the results of states and sensitivities of the study participants from the modified SF12-core and the VFA correlated.

On blood pressure and pulse on both rounds only very minor changes were noted. In addition the difference between the both rounds were very low. It means that neither round listen nor round listen&feel can be found a significant difference, and have on the various passages no significant effect on these parameters.

Table 1. Comparison of the mean values of selected parameters
 Informations about the shortcuts in the tables
 D1: round listen, D2: round listen&feel, b: before, a: after
 d: value change between before and after, with a value of
 1 = no change, < 1 = decrease, > 1 = increase

Listening D1		Average	Listening&Feeling D2		Average
Pair 1	D1b_agitation	2,55	Pair 12	D2b_agitation	2,90
	D1a_agitation	2,15		D2a_agitation	2,40
Pair 2	D1b_mood	2,35	Pair 13	D2b_mood	2,25
	D1a_mood	2,05		D2a_mood	2,00
Pair 3	D1b_excitement	3,30	Pair 14	D2b_excitement	3,15
	D1a_excitement	2,60		D2a_excitement	2,65
Pair 8	D1b_stresslevel	3,70	Pair 19	D2b_stresslevel	3,60
	D1a_stresslevel	3,05		D2a_stresslevel	3,00
Pair 9	D1b_fear	3,60	Pair 20	D2b_fear	3,55
	D1a_fear	3,10		D2a_fear	3,00
Pair 10	D1b_aggression	3,45	Pair 21	D2b_aggression	3,55
	D1a_aggression	2,80		D2a_aggression	2,95
Pair 11	D1b_strain	3,70	Pair 22	D2b_strain	3,85
	D1a_strain	2,30		D2a_strain	2,50

Table 2. Changing values and differences of D1 and D2
 d: value change between before and after, with a value of
 1 = no change, < 1 = decrease, > 1 = increase

changing value listen - listen&feel			difference D2 to D1
Pair 23	D1d_agitation	0,92	-0,04
	D2d_agitation	0,88	
Pair 24	D1d_mood	0,95	-0,04
	D2d_mood	0,91	
Pair 25	D1d_excitement	0,80	0,08
	D2d_excitement	0,88	
Pair 29	D1d_stresslevel	0,84	0,08
	D2d_stresslevel	0,92	
Pair 30	D1d_fear	0,90	-0,03
	D2d_fear	0,87	
Pair 31	D1d_aggression	0,87	0,06
	D2d_aggression	0,93	
Pair 32	D1d_strain	0,64	0,04
	D2d_strain	0,68	

All parameter change values in both rounds are smaller than 1, accordingly all the parameters have improved for better states and sensitivities. If the parameters in the table of change values are compared with each other, it is to be noted that the respective values are not far apart.

On closer analysis significant positive changes in some values and states within the respective rounds could be identified. In round listen the stress level, fear, excitement and strain could distinguish significant positive changes. In round listen&feel mood, excitement and strain could distinguish significant improvements.

With regard to the relevant investigating differences between the two rounds, there are no significant results.

In the following, selected changes in the sensitivities and conditions of the test subjects are presented in diagrams.

Agitation

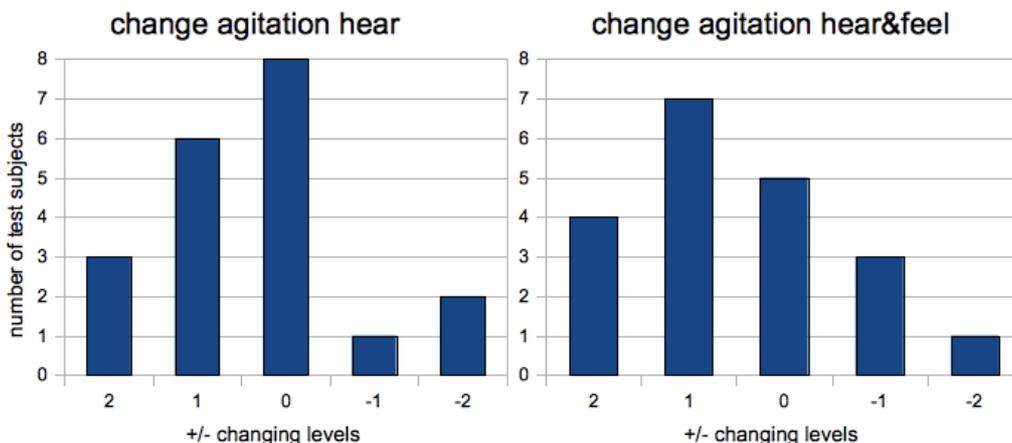


Figure 1. changes agitation listen and listen&feel

Fear

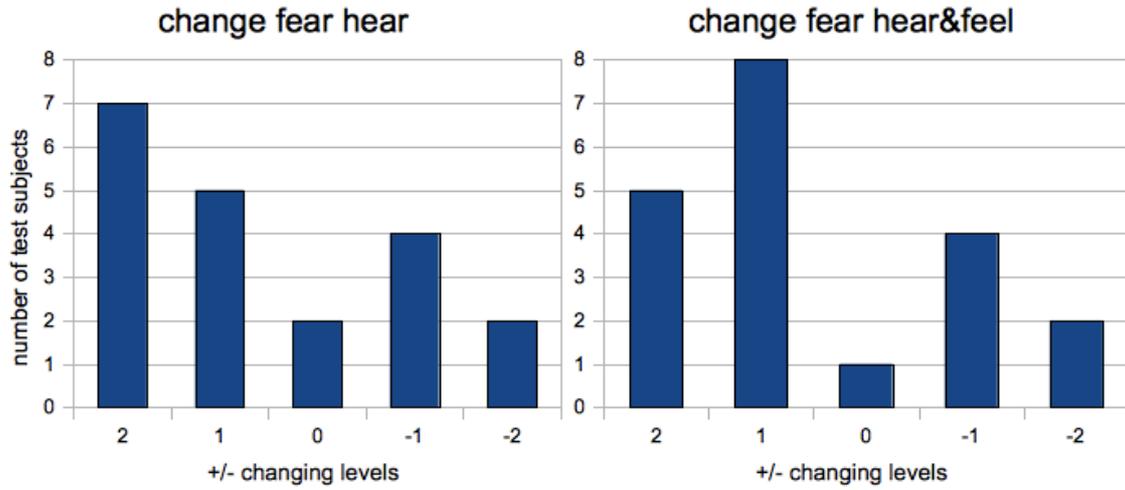


Figure 2. changes fear listen and listen&feel

Aggression

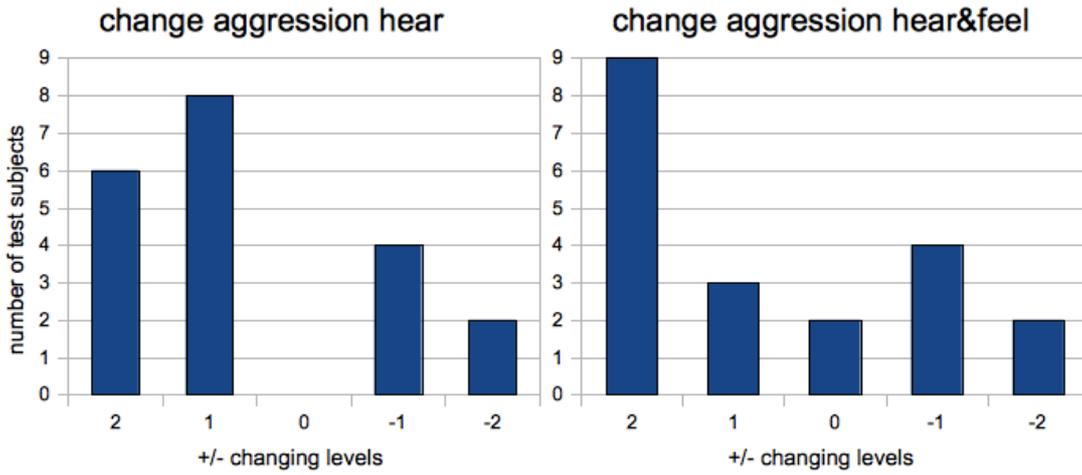


Figure 3. changes aggression listen and listen&feel

Strain

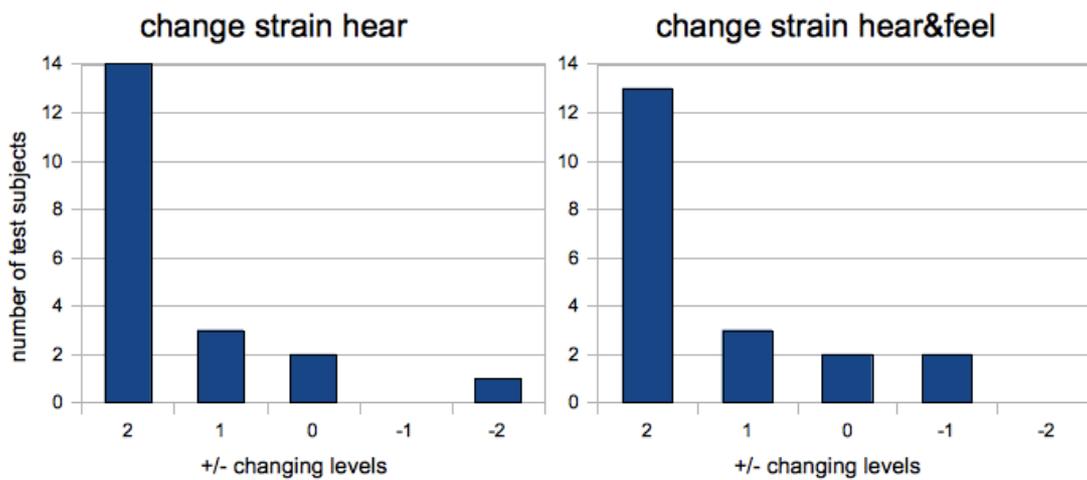


Figure 4. changes strain listen and listen&feel

The present results of the investigation, which were analyzed statistically, are not clearly. Some subjects experienced an improvement in sensitivity and states, but also some the opposite.

The figures shows that a person has liked round listening better, the other round listening&feeling. Some like the songs, another remains calm and another finds this kind of music rather soporific or annoying. It also depends very much on the personal subjective feelings and the prevailing mood of an individual on what was experienced in the (near) past.

Therefore, the personal assessments of the individual test persons have to look more subjective. The results of the vocal frequency analysis have to evaluate more objectively, as the VFA goes deeper into the organism and can therefore better be analyzed.

An Interpretation of the test is this, that you feel the music consumption comfortable, but that the well-being relate to neurotransmitters, such as adrenaline, acetylcholin, serotonin, gaba, dopamine, etc., which the music can release. It could be that the experienced music just damp ultimately like the drug, but is not targeted at the problem. You feel it, although always well, but only if the music is listened again. One could then even be addictive.

Therefore it can be stated that based on the results of the comparison study between listening and listening&feeling with a vibroacoustic mat, no significant differences in the stress state of the music consumers can be found.

Conclusion

- It can be achieved a more intense experience of music with a vibroacoustic mat, cause of listening and feeling
- The general stress state of the music consumers can not be improved significantly by listening and feeling of music as opposed to pure listening.

Discussion

The subjective estimation of ones condition depends on ones actual emotional status. An additional objective measurement system like VFA proves to be an important instrument to validate subjective statements.

Multisensory application intensifies the experience of music and increases the proband's sensitivity.

* The vibroacoustic mat was provided by Annegret Heinen IFG, Germany, Zürnstrasse 5/1, 88048 Friedrichshafen, www.rhythmovogueplus.com