Traditional oriental music therapy – a regulatory and relational approach

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Introduction

Traditional oriental music therapy is a system documented over about one thousand years, of therapeutic, prophylactic and rehabilitative relevance, as we see it today, and has proved its worth in practice. In its traditional form it was used in hospitals as a regular paramedical discipline and part of Islamic arts of healing from the 9th century onwards.

One theoretical basis was humoral pathology (the theory of four humours), another the religious-philosophical conviction that music – as an audible musical transposition of cosmic sound – nurtures the „spirit soul“ as well as the „material body“.

The idea was that a variety of different microtonal scales (Makamat) helped to produce certain desired effects in organic systems and emotions through a regulative effect of music on the „humours“. For further historic details see references¹.
With the replacement of the humoral-pathological treatment model by the concept of biomedicine, this therapy approach disappeared from hospitals in Turkey and the Arab countries. In the middle of the 1980s, Oruc Güvenc returned to the approach in Istanbul and tried to re-establish it in the traditional form. His efforts assumed an intercultural dimension through cooperation with this author from 1984 onwards (compare Tucek, 2003). In Austria today, the approach has been adapted to local conditions with regard to clinical needs, is well established and increasingly evaluated according to scientific criteria (see below).

A basic difference between the traditional and the current therapy concept may be summed up as follows: in the Middle Ages, music was interpreted as an *objective quality of being* (in orient and occident alike). The individual was able to make this quality visible, but not capable of producing it himself.

Today, in contrast, music is interpreted as a subjective human expression that may find its fulfilment in beauty.

For an understanding of traditional oriental music therapy (as it is practiced and taught in Austria today) this change means that the therapeutic effects are no longer based on a ‘cosmic system’ from outside, but rather on a re-structuring of an *inner system*. This occurs in the work (by those involved in the process) on meaningful musical contents and forms of expression that may be experienced as pertinent. The method used in this context comprises an alternating musical dialogue between patient and therapist (compare Tucek 2005a), the „regulative-medical“ effects of music played live by the therapist, as well as therapeutic movement and dance exercises.

An essential **challenge to traditional oriental music therapy** (as part of the cultural transfer) was a scientific analysis of the receptive method in regard of the theory of an organ and emotion *specific* effect of the Makam structures.

Against the background of modern brain research findings that understand the brain as a socio-cultural organ\(^1\), the theory of a transferability of specific emotional influences through Arab or Muslim musical styles on a European patient must be doubted. This is due not so much to any cultural prejudices but rather to culturally influenced (sound) preferences and images (on the part of therapist and patient).

Nevertheless, clinical practice of traditional oriental music therapy shows clearly documented therapeutic effects.

Some remarks in this context from the perspective of cultural and social anthropology:

Man is a universal and at the same time a culture-specific being with regard to music perception.

- A **universally human level** is the location for the psycho-physiological effects of rhythms (drums, rattles, etc.) and sound spaces (harmonic overtone singing, gong, etc.)
- The **level of culturally shared experience** with pertinent associations may be illustrated with the following example: most people in our culture associate the Christmas carol „Stille Nacht, heilige Nacht / silent night, holy night“ with a festive or joyful mood.
- Let us now imagine a family singing this song in front of the illuminated Christmas tree when the father breaks down with a heart attack and dies. We may assume that what this song will evoke in this particular family in future will not be a festive mood but grief (**level of subjective experience**).

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1. Apart from the genetic foundation, human experience is influenced by a multitude of „epigenetic“ factors (cultural, social, individual experience context).
On the understanding that the therapist has incorporated the oriental musical material thoroughly in the course of his training and supervised practice, then he might be able to transfer basic emotional moods like joy, calm, peace etc. through a loving and joyful therapeutic relationship in support of the music.

It is possible to establish new, and for the patient positive, sound experiences in this way (via Makam scales and oriental instruments). In selecting the modes and pieces of music, however, we must ensure that the chosen musical structures are not too remote from what a patient is used to listen to.

In simple words, we must find a way between a potential „fascination“ for what is new, and a potential rejection of what is „just too strange“. If the therapist is successful here, he will stimulate therapeutic processes in the patient the physiological correlates of which may be measured and illustrated chronobiologically.

A superior objective of the therapy is the intention to support patients during therapy in recovering a harmonic interplay between external cultural life style and internal subjective harmony.

In this sense,

“... music is not only what it is, it is what it means to the individual, what it can do for him or her ... the pursuit of music can show human beings what they have in common.” (Sir Simon Rattle)

Hesse demonstrated that a subjective access to various types of music in the course of a human life is not static but changes continuously (2003, p.7).
In addition, our subjective access to music is determined by external factors. In our clinical practice we frequently observed patients and their families who developed a very positive attitude to musical offers of receptive traditional oriental music therapy; but after release from hospital they did not continue. Only upon re-hospitalization did this type of music regain significance. Therefore, a positive response to traditional oriental music seems to be connected to the clinical setting. A relative said: “Now that I am back among the group, I know what I have been missing for the last six months.” Music thus serves to recreate the mood, not only as recreation, but as a turn to the innermost core. On this basis, music provides a natural foundation for the recovery of the “entire self”, even if the individual is seen as “sick” or “handicapped” in the medical sense.

I believe an important effect of traditional oriental music therapy is that in first contact there are no (previously) established individual associations with known musical styles, since the sound (instruments, Makam structure) is so new and different. This leaves room for new structures and new associations.

**Music therapy in medicine / music medicine**

I want to give a short description of the relationship between “music medicine” and “music therapy in medicine”. The following table by Krautschik (2003) sums up the most important positions which have considerable influence on the respective therapeutic concepts and their research designs.

<table>
<thead>
<tr>
<th>Music medicine</th>
<th>Music therapy in medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positivistic scientific tradition</td>
<td>Hermeneutic scientific tradition</td>
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</table>
TABLE 1. therapeutic concepts and their research designs

<table>
<thead>
<tr>
<th>Biomedical concept</th>
<th>Relational-medical concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music has therapeutic potential by itself</td>
<td>Emphasis on relation: therapist-client; music-client</td>
</tr>
<tr>
<td>Symptom orientation</td>
<td>Health orientation</td>
</tr>
<tr>
<td>Starting-point: illness</td>
<td>Starting-point: health (resources)</td>
</tr>
<tr>
<td>Music as medicine</td>
<td>Artistic-creative activity</td>
</tr>
<tr>
<td>= desired biological effects</td>
<td>Improved quality of life through creative expression of self</td>
</tr>
</tbody>
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From my perspective of a clinical music therapist it does not make sense to neglect the human and social dimension which is so important for the recovery of a patient (music therapy in medicine) in favour of an approach with a focus on the therapeutic potential of music programmes for the only purpose of lowering blood pressure, for example (music medicine). Personally I do not feel comfortable with a perspective that does not consider the traditional intention of music to move humans individually, socially and transcendentially.¹

I was deeply moved by the self-attribution of a patient with severe traumatic brain damage at the Center of Neurological Rehabilitation of AUVA in Vienna; after a therapy session where he had actively participated in music-making in the common room, he told other patients he was an “artist”. I quote Aldridge in this context:

“... health is a performance that can be achieved. Health is not simply a singular performance; it is performed with others.”

(2005; p.264)

The question is which therapy approach may offer the most effective help to which patient in which situation and stage of therapy. It would be fatal

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¹. It must be noted, however, that other criteria in handling the therapeutic potential or music are legitimate and valid as well.
to replace positions of music therapists by musical programmes in future in order to save money.

*From empirical experience to scientific foundation:*

The clinical variety of traditional oriental music therapy of today combines both concepts in its equally “regulatory-medical” and “relational-medical” approach. In the past, we evaluated clinical therapy processes via empirical observations and documentation (case description, video documentation).

In addition we intend to found this approach on physiological “hard facts”. Early clinical studies (Murg, Tucek et al., 2002; Tucek, 2005b; Tucek et al., 2006) represented important steps. Clinical practice, however, was full of organisational hurdles. Selected research methods often limit the freedom of therapists to act. Consequently we continued to look for methods that would not confine a music therapist (in the sense of a best practice model) to a previously determined method of intervention (active versus receptive).

*Regulatory-medical concept and receptive traditional oriental music therapy*

In a receptive therapy approach, precomposed pieces (comparable to the so-called play songs in Nordoff Robbins music therapy) alternate with rhythmically improvised passages. The effects observed were activating and deactivating respectively (sympathicotonic versus parasympathicotonic).

Results of a clinical EEG study at the Meidling centre for neurological rehabilitation on patients with severe traumatic brain damage revealed
that this receptive approach may have relaxing effects (reduced spasms) and at the same time improve vigilance (Murg, Tucek et al., 2002; Tucek et al., 2006).

Similar relaxing and anxiolytic effects were reported in a study with 64 patients at the Groß Gerungs centre for cardiological rehabilitation (Tucek, 2005b). A recent clinical study on in-patient treatment for depressive episodes had comparable results (Scharinger, 2006).

**In summary:** Traditional oriental music therapy appears to be a well-established means with a regulatory influence on mental-physiological processes.

We now look at the question whether in addition to regulation (activating / deactivating effects) it is also possible to influence organs in a more differentiated way. The following – simplified – aspects are taken into consideration:

- If the therapeutic agent is in the *structure of the note scales* themselves, then this should have a direct impact on the body in the sense of a physical resonance phenomenon. (Assumption: Makam has (physiological) effects independent of cultural imprint).
- If the therapeutic agent is in the *mental influence via the associative channel*, then music would be connected with previous cultural and individual experience in its predictable effects. (Assumption: All people – even all individuals – have “their own” music)
- If the therapeutic agent is in the *musical relationship*, then music would be a human-relational resonance phenomenon. (Assumption: music functions as a significant field of experience and activity)

**Current research approach**

The dimension of relational and regulatory medicine will now be illustrated with two examples of measurement and on the basis of different chronobiological methods of data collection:
- **Example 1** shows the change in the regulation state in a patient with acute myelotic leukemia (AML) through music therapy.
- **Example 2** illustrates the relational dimension between therapist and patient with acute lymphatic leukemia (ALL) in the course of a therapy unit with individual synchronous stages. (compare Tucek et al., 2006)

**EXAMPLE 1**

A portable ECG apparatus with a scanner frequency of 4096 Hz, i.e. many times higher than traditional long-term ECG appliances, measures heart rhythms. The resulting so-called “spectrogram” reflects the rhythms of numerous endogenous systems (respiration, peristalsis, hormonal secretion etc.). The differences in the sequence of heart beats show the respective dominance of one of the two branches of the autonomic nervous system on the pacemaker nodes of the heart. (The sympaticus acts as an accelerating part of the autonomous nervous system (ANS) and generates fight, flight, performance etc.)

The parasympathicus in contrast supports regeneration and recovery. This is why the parasympathically controlled part of the heart rate variability (HRV) is an indication of the ability to recover, which is an essential precondition for health.

The following health parameters may be deduced from HRV measurements:

1. AML is a malignant cancer of myeloblasts. These are the immature preforms of various granulocytes. The immature granulocytes are nonfunctional and divide in uncontrolled fashion. Then they suppress the healthy blood cells from blood and bone mark and often infiltrate spleen, liver and brain. AML is the most frequent form of leukemia in adults. (Reference: www.ArztScout.com, per July 13, 2006)
2. ALL develops like this: Lymphocytes (subtype of white blood cells) that are responsible for immune processes degenerate. Degenerated lymphatic cells collect in the bone mark, destroy growing blood cells and replace them. (Reference: www.ArztScout.com, per July 13, 2006)
Current research approach

- **General condition, vitality, “biological age”:** the product of constitution and lifestyle. (Even with best genetic preconditions, “wasting illnesses” or unhealthy lifestyle may use up resources.)

- **Regulatory capacity:** adaptation and interaction between resonant frequency (day – night, rest – activity) and external influences (appointments, others, sports etc.)

- **Physical resilience:** lower pulse in sleep, heart rate under and after stress, range and intensity of frequency analysis of heart rate sequence reflect the potential in this area.

- **Mental resilience:** detection at 0.1 Hz. in combination with pulse-respiratory quotient, heart rate and variability in the respiration-modulated high frequency range are indicators of mental resilience.

- **Ability to recover:** Recovery is the basis for resilience. Sympathicus reduction and simultaneous increase in high frequency parts of heart rate variability, decrease of pulse and respiration frequency are objective units of measurement.

- **Quality of sleep:** qualitative and quantitative aspects of calm and deep sleep phases are evaluated. Extent of vagus activity.

The coordination of respiratory frequency and heart rate sequence produces a restructuring of psycho-physiological processes in the sense of an “economization” of the entire system that is reflected in the “spectrum”.

This comprises the following frequency ranges (Figure 1 on page 633):

- **Very Low Frequency** (VLF), a range between 25 sec. and 5 min. with a frequency of 0.04 – 0.0033 Hz., dependent on body position, physical activity and thermoregulation.

- **Low Frequency** (LF), a range between 7 to 25 seconds and a frequency of 0.04 and 0.15 Hz. It is parasympathically and sympathically controlled and corresponds to the blood pressure rhythms.

- **High Frequency** (HF) as presented in the figure moves between 2,5 and 7 seconds in a range of 0.15 to 0.4 Hz. It is parasympathically controlled and modulated via respiration.
Another important term in regulation diagnostics is “respiratory sinus arrhythmia” (RSA): the coordination of heart and respiratory frequencies, ideally at a ratio of 4:1 (e.g. 60 heart beats with 15 times breathing per minute). In the spectrogram, RSA becomes visible in horizontal lines in a range between 0.2 and 0.4 Hz, mainly in restful sleep. Additional literature: Hildebrandt et al., (1998); Moser et al., (1994); Moser et al., (1999); Moser, in Tucek (eds.), (2005b).

**Clinical applications of traditional oriental music therapy – examples**

Figure 2 on page 634 shows the spectrogram of a healthy test subject in the course of a receptive encounter group session as part of the study course in traditional oriental music therapy. The purpose was to stimulate regenerative regulatory mechanisms for a balance of sympathicus and
parasympathicus activity. The test person was lying on a mat while the training therapist was turned to her and made music on an Arabian/Turkish lute.

**FIGURE 2. Spectrogram of a healthy test subject**

Explanation and interpretation of the figure. We recognize a distinct reduction in sympathicus activity (no blue shades visible in the low frequency range), and above all the phenomenon of a six-peak HRV as an indication of high-level coordination of breathing and heart beat in the sense of an excellent regulatory ability. The occurrence of such a resonance phenomenon may be seen in the specifically harmonic dynamics of breathing excursions. Deep breaths in „musical“ frequency lead to rhythmic shifts in the rest membrane potential of the cardial conductive system. In combination with the also breath-induced high frequency and large variability of the heartbeat, this phenomenon produces spectral patterns as shown in Figure 2 on page 634. In other words: Just like the „heart dancing on the diaphragm“, the ECG observed simultaneously seems to be „dancing“. A rhythmic phenomenon of biosignal processing
which we also know from the analysis of heart rate variability in song and speech therapists (compare Moser 1999), and which here also correlates with subjective perceptions like general well-being, clarity, regeneration etc.

The occurrence of such resonance phenomena without „indication of breath“ via (speech) melody, rhythm, metre etc., exclusively as part of a merely passively perceived melody, must - we assume - be based on the interaction with the playing music therapist. The occurrence in a merely passively received melody is unusual and not to be expected according to previous experience with perception from audio equipment. The reason of this resonance effect is not quite clear. We assume that the phenomenon is due to two components, the trusting relationship (the training therapist and the student knew each other) and the music (as an agent conveying calm and relaxation)\(^1\).

\textit{An example of measurement of a healthy test subject in a traditional “healing dance” (Bakse)}

The following Figure 3 on page 636 and Figure 4 on page 636 show the spectrograms of the same test person during a traditional “Bakse” dance used for activation (for details see Tucek 2003b).

\(^{1}\) Further research projects addressing this question are in preparation.
An example of measurement of a healthy test subject in a traditional “healing dance”
FIGURE 5. End of dance

The entire variability (performance) at the beginning (Figure 3 on page 636) at 12:45 p.m. has reached 1.500 msec², at the end (Figure 5 on page 637) at 1.10 p.m. it is 2.300 msec².

Simultaneously, a distinct respiratory sinus arrhythmia is visible at the beginning (Figure 3 on page 636), but no longer in the end (Figure 4 on page 636); on the contrary, the spectrum appears denser here, with a harmonious course ascending from the low frequency range. Another obvious fact is the trough-like harmonious course of HRV, congruent with the process of activation and the progressing dance.

In the middle part of the dance (Figure 4 on page 636) there is an unusually high HRV of more than 15.000 msec², with a heart rate of 130 beats per minute, a phenomenon all the more remarkable since usually HRV decreases with increasing heart frequency, which is due to mathematical and physiological factors exclusively.
In simple words, this means that we have an initial state of tiredness, then a doubling of performance (pulse increase from 66 to 125 beats per minute) within 17 minutes and a tenfold increase of the performance potential (from 1500 to 15,000 msec²). Normally we would have expected to see a decrease in performance potential with increasing heart frequency, whereas in this case we saw a potentiation of performance potential.

What appears remarkable in Figure 5 on page 637 is that the performance potential was clearly higher at the end of the dance compared to the start, and was harmonically spread over a wide frequency range; this suggests an auto regulation in the course of the dance in the sense of intensified economization and activation.

Figure 6 on page 639 and Figure 7 on page 639 show an exemplary measurement of a 21-year-old male patient (Mr. P.) with myelogenous leukemia in the course of a receptive therapy session. The patient was recumbent on a hospital bed, while the therapist was turned to him and played an Arabian/Turkish lute and a harpsichord. At the time of measurement, Mr. P. received a block of chemotherapy. Prior to measurements he complained of weakness, fatigue, diffuse pain and indisposition.

1. At the pediatric oncology station of the children and women’s hospital in Linz (Austria).
Explanation and interpretation of figures. The basis is a medium level of activation with simultaneously recognizable signs of fatigue (RSA) (Figure 6 on page 639), which disappear completely after 15 minutes. Towards the end of the session (Figure 7 on page 639) we see a fourfold increase in the heart rate variability (from 100 to 400 msec\(^2\)) with signs
of physical activation (blue colouring in the low frequency spectral range). The patient’s heart rate fell from a mean value of 82 to 58 beats per minute in the course of the session. This indicates that the reduced general state described by the patient prior to therapy, i.e. sensations of weakness, sickness and diffuse pain, was transformed to a vegetative stabilization with reduced pain (heart rate reduction), increased vitality (HRV increase to the fourfold amount) and disappearance of sickness (patient’s spontaneous remark after session). This interpretation was also confirmed in the interview on the patient’s subjective state of health after the session.

**EXAMPLE 2:**

A SMARD watch – another system of non-invasive measurement and analysis for regulatory diagnostics - involves measurements of the parameters heart frequency and pulse frequency (HF and PF), muscular activity (EMG), skin potential\(^1\) (HP), skin resistance\(^2\) (HW), skin temperature (HT) and convection temperature\(^3\) (KT).\(^4\)

Figure 8 on page 641 shows the dynamic functions of measurements in patient A suffering from ALL (above) and therapist (below) in the course of the session at the above-mentioned pediatric oncology unit. For simplification, average measurements were taken across all three physiological parameters, skin resistance (vegetative-emotional processes), skin potential (nervous-cognitive processes) and electromyogram (muscular processes).

The general similarity of the curves in this figure suggests a high degree of synchronisation between therapist and patient A. The shape of the curve may be interpreted as indication that the therapist succeeded in reaching the patient immediately and “carrying her along” in this music therapy session. This underlines the basic significance of the relatory component and also the fact that it is possible to measure and illustrate this component in music therapy.

The therapist’s condition and sensibility and the resulting ability to empathize with a patient’s condition (perception and musical implementation of needs) are therefore decisive factors if a music therapy session is to be successful.
Summary & outlook:

Experienced music therapy researchers know the difficulties of clinical practice with regard to replicability and standardization (compare: Tucek, in Aldridge (ed.), (2005); Scharinger, (2006). But on the other hand there is a legitimate demand for “hard facts” to verify therapy efficiency. A general discussion of this subject is beyond the scope of this presentation, but I would like to underline the two essential advantages of the approaches described here:

- Both measurement methods allow a music therapist flexibility in his interventions with individual patients without rendering the measuring procedure worthless.
- Both measurement methods produce physiological “hard facts”, e.g. heart and pulse frequency (HF and PF), muscular activity (EMG), skin potential (HP), heart rate variability (HRV) etc.

The measuring methods described here are an additional tool for therapists to reflect patients’ feedback and their own perceptions and observations of a given situation on the basis of objective measurements. These approaches open up new possibilities and perspectives for evaluation of processes in music therapy.

A large number of measured data collected so far confirm the trend found in the examples presented here. We have now started to study long-term therapy effects of traditional oriental music therapy by research into patients’ quality of sleep¹.

¹. In short: we assume a relation between the quality of an individual’s sleep and his or her regenerative abilities.
References


INTERNET: www.ArztScout.com (13.7.06).
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