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Töres Theorell

Psychological Health Effects of Musical Experiences

Theories, Studies and Reflections in Music Health Science

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Chapter 1
Introduction

This book is about links between music and health. The emphasis is on music and public health, i.e health effects of listening to and making music in the general population. Relationships between music and health may arise in several ways. Those who have not given so much thought to this might say that music makes us relaxed and calm and that this explains why music could make us healthier. But this is not the only way in which music may influence our health. More often, we use music as a stimulant when we feel tired. Sometimes we use music for distraction. In music therapy, music is used for the release and amplification of feelings that are useful during a psychological healing process. And then, we are talking about a wide range of feelings, from pride to sadness and from joy to anger. From time to time, we all amplify different kinds of feelings by means of musical experiences even when we are not talking about music therapy. A point of departure for our thinking about music and health may be the stress concept. As we shall see, music may both increase and decrease stress. In order to create a theoretical basis for the rest of the book, I decided to devote the first chapter to the stress concept and stress mechanisms and how these relate to music in our lives.

So what role does music play in relation to our health? Let us first ask the question what role music has in modern life in general. Perhaps human beings are more exposed to music today than ever. We can see people carrying portable listening equipments in the subway, and we can hear music everywhere in homes, shops, offices and public places. The music industry is growing. But music has always been around in the history of mankind. There have even been serious scientific discussions (Mithen 2005) about the possible musical talents and activities of our ancestors the Neanderthals. According to archaeological findings, these prehistorical people have produced flutes made from bones already more than 40,000 years ago, and this means that music may have been important for them. Some authors have emphasised that music may have been important for group survival when the group was exposed to dangerous environments. Music was used along with dance and religious and other rituals in order to strengthen group cohesiveness. And cohesiveness was, for instance, important for group trust in guarding against attacks from wild animals at night (see Hagen and Bryant 2003).

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If music has been important to the survival of the first human beings, it could also be that those who did not manage to be included in tight cohesiveness may have been less likely than others to survive. The individual willingness and ability to be included in a musical context may have been an important component here. That does not necessarily mean that those who were more likely to survive were good producers of music, but perhaps they were better listening participants—more able to experience strong musical cohesiveness—than those who did not survive? Prehistorical cave paintings in different parts of the world, produced tens of thousands of years ago, have been interpreted as pictures of ecstatic experiences. Music may have had a role in this since musical instruments appear in some of them. The social aspects of music have been important for human beings for thousands of years and remain important still today. In contemporary society, the social effects of music are utilised for commercial and political purposes. We are not always aware of this. Social aspects of music listening and production are accordingly in focus in Chap. 2. Chapter 3 focuses a specific aspect of music's social functioning namely the religious music.

The possible survival value of music has been discussed in the scientific literature. Some researchers have dismissed it. My interpretation is that the survival aspect can only be dismissed if we regard listeners and producers of music as solitary individuals only. However, if we use a group perspective, the survival value may become more obvious. There is contemporary research that makes it likely that music strengthening group cohesiveness may prolong life even today, although the mechanisms are different and not well explored. Such discussions also show how difficult it is to scientifically "isolate" the independent effect of music per se. Music is always presented in a given context (acoustics, smells, light and social environment).

To be a better music performer—to be a better instrument player or singer—than other people may not have any survival value in itself, although there are poetical descriptions of dangerous situations in which a good performer used his/her music for survival. The most famous example is the legend about Orpheus who played on his lute in order to soften the demons when he walked through the world of the dead. But, as pointed out earlier, ability to participate in musical experiences may also have a survival value. Tone deafness is very uncommon in the general population, and amusia (lack of ability to perceive that music has any meaning at all), a neurological condition, is even more infrequent. The fact that tone deafness and amusia are so uncommon may speak in favour of the opinion that ability to enjoy music has favoured survival through thousands of years.

There is a lively scientific discussion is about the possible role of music in stimulating violence and use of drugs. Some researchers have maintained that some kinds of music may have such negative effects (Sloboda and O'Neill 2001; Roberts et al. 1998) and that such music may even raise the risk of suicide (Stack and Gundlach 1992). Other researchers claim that this is not the case. The rapid distribution and the high availability of such music contribute to the importance of this since music amplifies emotions and communication between people, something that can be utilised by commercial and political forces (see for instance Brown and Theorell 2006).

Different social groups and different age groups prefer different kinds of music. This is a logical consequence of music's strong effect on group cohesion and group identity. In 1956, when I was thirteen years old, I joined my parents when they played solo parts (violin and piano) with the chamber orchestra in Kiruna, a small mining city, north of the Arctic circle in Swedish Lapland. I was allowed to participate as a temporary orchestra member. Most of the members of the orchestra were mining workers who loved classical music. I was very impressed by the joy with which they played Mozart. Later during the 1970s, this music was considered upper class music, and the mining company was forced to shut down the orchestra. This is a problematic aspect of the social stratification of music. Classical music is not in itself "upper class", but it has been associated with higher social class. People in lower social classes may find that the upper class has isolated itself socially partly by means of this music.

Rap and heavy metal are music genres that started as social protest movements for young people with small social resources. They have been subjected to sociological analysis with the central question: are they dangerous for our youth? There is no simple answer to this question. Different kinds of music have different effects and correspond to different kinds of needs. In order to make it even more complicated, different groups of researchers have had different points of departure when they have studied this question. One group of researchers (Ballard and Coates 1995), for instance, found that rap seemed to trigger more anger than did heavy metal. Another group (Rubin et al. 2001) found that heavy metal might have mirrored underlying feelings of aggression and lack of respect for women. According to Rubin et al., those who chose rap felt more aggression and less trust in other people than others. While the first group of authors emphasised the feelings that music can trigger, the other group of researchers thought that a defined type of music was chosen by a corresponding group of subjects; hence, the music genre mirrored feelings that were already there. The latter type of theory dominated the discussion during a period. One theory was that the important underlying factor could be sensation seeking. According to that hypothesis, persons with a high degree of sensation seeking were attracted by hard rock and heavy metal. They may also have been drawn to antisocial groups (Arnett 1992). However, antisocial behaviour might have been stimulated by social factors existing in specific groups. Sensation seeking is only partly inherited biologically. It is amplified or weakened by the surrounding social conditions. Therefore, the two contrasting researcher positions are not so far away from one another as one might believe. It should be pointed out that social patterns change rapidly. Therefore, it is not possible to generalise this discussion to the situation today.

Another aspect of the use of music is that it can also be used for "shutting oneself off from the community" so that we get rid of disturbing sounds in our environment. With modern portable music listening equipment, we can listen to music that people in our immediate vicinity cannot hear. This is of course the opposite of the cohesiveness aspect that I would like to discuss; people around the listener become totally unimportant, they are almost like furniture. Despite that this kind of music listening has such an antisocial aspect, there is still one remaining social

component: The listener feels togetherness with those who produced the music, and the group of people who are likely to listen to it. Therefore, even that type of listening may strengthen group cohesiveness, albeit not with those who surround the listener physically for the moment.

During concentrated listening, music could serve as a distracting factor: music is used for the purpose of forgetting or "pushing out" a problem. The opposite is also frequent: if I have had a bad experience at work and I feel sad I may go home switching on some really depressing music in order to really dwell in my own sadness.

The common denominator of all these uses is that we use music for dampening, amplifying or arousing specific feelings. Others may also do this to us. I am thinking of composers of music used in films and advertisements. They are consciously manipulating our feelings when we take part in something that is not primarily musical. Most composers of such music are probably not prepared to share their knowledge with us. During earlier music periods, for instance the baroque, textbooks were produced, cookbooks telling the reader how to amplify specific types of emotional states—Affektenlehre (see Mattheson 1739).

Like, for instance, singing birds, whales and gibbon apes, music has importance also for contemporary human beings in the creation of love relationships. I am myself an example of this. Both my maternal and paternal grandparents met and fell in love when they were making music together. My paternal grandfather was singing the bass solo in Haydn's Creation when my grandmother accompanied him on the piano. And this was the start of a marital relationship. My maternal grandparents started their relationship by singing duets. I have married twice, and music was an important part in the start of both marriages. In families without active music performers, music is mostly of significance in the creation of "appropriate" emotional conditions in mating processes.

There are two personal points of departure in this book: one is my own experience of music and the other one is stress research. Since I am a researching physician and since most of my research has been focussed on stress, it is natural for me to consider cardiovascular, endocrine and immune reactions when I listen to or perform music. A considerable part of the book is accordingly based upon research that I have been doing with colleagues. It has not been so easy to find funding for research on bodily effects of music, and progress has therefore been rather slow in this field particularly when comparing with other research areas that I have been involved in. When I talk about myself and my colleagues, I am referring to a rather large group of researchers who have often been doing other kinds of research at the same time as they have been involved in music research. They are specifically mentioned in another part of the book.

My own musical background is predominantly in classical music. When I hear a piece of classical music played on violin and piano, I feel both secure and stimulated. My mother was a professional pianist and teacher of harpsichord at the college of music in Stockholm, and my father was an amateur violinist who almost became professional when he was young. This means that as a small boy I often

had their music performed live in my ears when I was going to sleep. In particular, I remember a joyful fast piece for violin and piano (Humoresque, see notes) by a Swedish composer, Tor Aulin (1866–1914), and by a slow movement in a sonata in E minor for the same instruments by Emil Sjögren (1853–1918). Both of these composers had been influenced by impressionistic music and were my parents' contemporary musical heroes when they were young. I also heard my mother practice endlessly some of the most difficult passages in the piano part in Schubert's trout quintet. This kind of repetition became part of my feeling of security. Musical guests were frequent and chamber music was often played, for instance Johannes Brahms' trios for piano, violin and cello and Robert Schumann's quartet in E flat major for piano, violin, viola and cello. Every time I hear tunes from these pieces, I have a very special feeling of attachment.

It is likely that I heard this music even before I was born. It has been shown that the foetus is able to hear music during the third semester of the pregnancy and that after birth it reacts physiologically in specific ways to the music pieces that it has been exposed to before birth. Perhaps this could explain the special role that these pieces have for my musical experience.

Both as a child and as an adult, I have been singing and playing the violin. This has become so important for me that I cannot abstain from making music. This strong drive to perform music is of course not unique to me. The question is how it arises.

There is in me, like in everybody else, a mixture of aesthetic, emotional, social and bodily components in the experience of music. These will be further discussed in the following chapter on stress. The first component is related to aesthetic and emotional experiences. Strong musical experiences, as mentioned above, may trigger or amplify specific emotions, for instance intensive sadness, in unexpected ways. As an adult, I have almost never wept. I can only recollect one occasion on which I wept intensively. This was at my father's funeral. As long as the funeral was based upon words, I had no strong emotional reactions. However, suddenly musicians started to play the slow movement in Schubert's string quartet behind my back—a piece that I had heard my father play many times. I was emotionally unprepared for the strong effect when I started weeping strongly. The surprise effect was overwhelming since I had not seen the musicians before they started playing. Le Doux (1998) introduced the electrical "short cut" of music directly to the emotional brain. This means that the electrical music impulses are transmitted to the thalamus in the midbrain, a station for sorting all sorts of incoming signals. From the thalamus, the impulses are transmitted directly and rapidly to the emotional brain—the "lower" and more rapid path. A "higher" and slower path take impulses to the intellectual parts of the cortex. Accordingly, the emotions are much faster than the intellect in processing music. This creates an important basis for surprise effects—with emotions aroused or amplified by the music, sometimes forcing the intellect in the direction of reorientation (see chapter on treatment). Another important point is that the same piece of music does not trigger my weeping in other contexts, it was the combination of music, the specific circumstances and the memory of my father playing it that triggered the reaction.

My special need for performing music, despite the fact that I am not a professional musician, could be regarded partly as a compensatory mechanism. I do not normally express strong feelings in words in my daily life. Perhaps I share with many others the need to express feelings musically when we do not express them so easily in words? The music is needed as an "emotion loudspeaker".

Another component in the "drive to perform music" is embedded in the strong social experiences arising when we make music together. Already when we listen together to a concert, we may have such feelings of cohesiveness in relation to the other ones in the audience, but this is stronger when we form a group performing music. This togetherness has both an intellectual and an emotional part. To make music is to a great extent to find the right notes and the right rhythm. When the music is complicated, this is intellectually demanding; and when we do it together, there is a social pressure with negative as well as positive connotations. If I perform wrongly, the others may become angry with me because everyone has to repeat the part that went wrong. However, when it finally works, there may be a strong collective reward. Such reward feelings are usually stronger when there is a group performing than when the performer is performing on his or her own. If there is an audience, this adds further to the reward.

For me the collective feeling, for instance, when I have been a choral singer in Bach's passions during Easter has been very strong. In such situations, I may feel that I leave myself, becoming part of a large community. This feeling is not particularly strongly religious for me personally and reminds me of the fact that these passions are staging strong feelings that everybody can experience—mourning, hatred and pity just to name a few. "Leaving oneself" in this situation is a kind of depersonalisation. This has been described in strong musical experiences by several authors, for instance Benzon (2001, see the chapter on social aspects).

Observations of depersonalisation remind us of mysticism and religion that we shall discuss in the chapter on religious music.

In the total experience of music, there are also other kinds of sensory input. My strong need to sing may have arisen partly in my childhood when as a child I was asked to sing a Christmas song to an audience of adults. This was in a marble room with strong echoing acoustics. The physical vibrations arising in my body in this situation made an inextinguishable lifelong impression on me. Physical vibrations may also be an important component for the younger generations. It could explain why young people often want maximal volume when they listen to or perform music. Apart from such physical external sensations, there are also bodily effects of singing on the immune and endocrine systems, bodily effects that arise internally because of the external stimuli.

For all music performers, amateurs as well as professionals, the strongest reward is the "flow" feeling. This is the elated feeling of "effortless attention" which arises when after long-lasting practice, the performer manages to make music in such a way that he or she feels very content with the performance (Csikszentmihalyi 1974). There is a high arousal level. This basic feeling is something that all musicians are striving to experience. I have been fortunate enough to experience it myself several times. According to my own experiences,