Introduction

Effects of Music on Health

Michael, a young adult, lived in Berlin under the care of his aunt. For years, he underwent neurological treatment, plagued by recurrent severe epileptic seizures. In addition, he had long-standing mutism: he could speak and understand others but had said nothing for years. Despite intensive medical treatments by doctors and a psychotherapist, neither the severe epileptic seizures nor his mutism could be controlled. As conventional medicine appeared to exhaust its remedies, the lead neurologist had a moment of insight: what about music therapy? Noting Michael's affinity for music, the neurologist discovered that Michael had frequently sung with his grandfather during his childhood. So he was referred to Julia Kraft, a music therapist and exceptional violinist with whom I have maintained a close friendship since our music studies.

In their initial introductory session, Michael arrived wearing protective headgear. He was completely closed off and had his legs drawn up in a crouched posture. Eye contact and verbal communication were not possible. Laying out a diverse range of instruments, Julia aspired to spark Michael's curiosity and nurture a budding interest. However, he did not initiate any contact or engage with the instruments. Julia went to the soundbed (like a wooden daybed with strings underneath) and plucked the strings. After a few minutes, Michael got up and began to walk around the room, adjusting his pace to the music's rhythm. He appeared to enjoy this 'improvisation', inspired by the music to vary his speed.

After this successful introductory session, Julia was able to build upon it in the subsequent session, during which they 'played' together – Julia

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on the soundbed and Michael through his steps. Thus, the two came into direct contact through the music and communicated without using words (recall, Michael had not spoken for years). When the session ended, Michael walked out the door with his aunt, turned towards Julia, and asked clearly 'And dance?' Julia was so delighted that she immediately picked up her violin and played a lively dance, to which Michael and his aunt danced exuberantly and snapped their fingers.

Michael progressed in the following weeks and months, step by step, sometimes faster and other times slowly. The music built trust between them. Julia spoke, commented, and consistently motivated him to join in, to which he increasingly responded with 'yes' or 'no'. Gathering courage, Michael approached the soundbed for their first collaborative session, engaging with the strings alongside Julia. Their interactions, ranging from soft caresses to forceful plucks, co-created moments of profound musical emotion. Michael often revisited their recorded sessions, and in subsequent meetings, he engaged more actively with Julia, as they made music together. This newfound expression through music led him to paint, initially in monochrome and then in vibrant colours, mirroring the depth of their sessions. Julia also discovered that, although Michael hardly spoke, he could sing and enjoyed it. They sang songs such as 'Old King Cole' and others that he knew from childhood, which enhanced his vocal communication. Gradually, he began speaking more frequently and clearly, significantly improving his daily interactions.

As their therapeutic journey neared its end, Michael's communicative skills blossomed, marking a significant turning point. The transition from mutism to verbal communication, coupled with the near disappearance of his epileptic seizures, underscored the profound impact of music therapy. Emboldened by his progress, Michael took up violin lessons, aspiring to play like Julia, and charted a new path for his life with renewed purpose and an apprenticeship. This transformative journey, from mutism to expression through music, exemplifies the profound, holistic impact music therapy can have. It not only illustrates individual growth and healing but also underscores the vast potential within the field of music therapy to effect change. This narrative invites a broader consideration of how music therapy can be further integrated into healthcare practices, advocating for a deeper exploration of its capabilities and applications.

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While Michael also underwent speech therapy and took epilepsy medication alongside music therapy, it was music that catalysed the decisive breakthrough. The melodies and rhythms roused a latent part of him, revitalizing his spirit and unlocking his potential. The effectiveness of music in this case was so evident that the consulting physician harboured no doubts about music therapy being an irreplaceable form of treatment.

Michael's story is a testament to the therapeutic effects of music, a compelling case that underscores the need for rigorous scientific research and informed policymaking to unlock the full potential of music therapy for a wider population. Fortunately, the health insurance company approved Michael's music therapy – a form of support that individuals in Germany, and indeed most countries, often cannot rely on. In many jurisdictions, the inability of doctors to prescribe music therapy directly is predominantly due to political reasons, creating a significant gap in healthcare policy. It is imperative for policymakers in these countries to amend legislation to ensure greater access to music therapy for patients in need, a change that should be grounded in the robust scientific evidence that I aim to present in this book.

The past few decades have seen a remarkable increase in research highlighting the therapeutic effects of music, providing compelling evidence of its efficacy. While the field had only garnered a few hundred papers by the year 2000, the subsequent years have witnessed the publication of several thousand more. This surge not only reflects the growing efforts to establish a scientific base for music's benefits but also underscores the urgent need for healthcare systems to adapt and integrate music therapy into their treatment offerings. Yet, a broad spectrum of disorders and diseases exists for which the efficacy of music interventions still needs to be scientifically proven. In medical-pharmacological research, typical studies implement a minimal therapy protocol to ensure precise control of therapy parameters. For instance, participants might take a new medication a specified number of times, with a control group receiving a placebo. However, substantiating the impact of music or music therapy introduces inherent complexities. Questions arise regarding whether the effects are derived purely from the music itself, or if the group experience, the bond with the therapist, a diversion from negative

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thoughts and emotions, or a combination of these factors play a significant role. Tailoring ideal methods for each individual, whether through singing, playing instruments, speaking, or drumming, poses additional challenges within the confines of a strict clinical study protocol.

Regarding the efficacy of music therapy, reliance on reasonable judgment becomes necessary at times, especially given the inherent challenges in obtaining evidence from placebo-controlled studies for several disorders and diseases. For some conditions, acquiring such evidence may never be feasible. Given that music therapy often extends over longer periods, ethical considerations may preclude the use of placebo controls in studies, particularly when withholding potential treatment could adversely affect patient well-being. Moreover, the rarity of certain conditions, such as Michael's disorder, limits the feasibility of conducting large-scale, randomized controlled trials. Despite these obstacles, the findings presented in this book are underpinned by high-quality empirical research. Focusing on some of the most significant illnesses, this book aims to showcase music's healing potential, offering insights applicable across a broad spectrum of health issues.

Writing a book that enthusiastically listed all kinds of reports on the positive effects of music or music therapy would have been straightforward. However, I have observed that many studies disseminated their findings without the requisite scepticism, leading to biased interpretations by individuals deeply invested in a particular therapy. Thus, despite my enthusiasm for the subject, I aimed at painting an unbiased and scientifically sound picture. To achieve this, I have meticulously reviewed thousands of pages of scientific articles, selecting from a vast collection of papers that cumulatively span tens of thousands of pages. Wherever possible, I placed significant emphasis on systematic reviews and meta-analyses, which compile and evaluate all available studies on a topic, providing a more reliable foundation of information than any single study could offer.

The scientific findings I will share with you draw from a tapestry of disciplines, reflecting the multifaceted nature of music's healing effects. Psychology, medicine, musicology, biology, and music therapy contribute to our understanding of the neurological underpinnings of music perception and processing, the profound emotional responses elicited

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by music, its cognitive influence, and the targeted therapeutic impacts on specific ailments.

My musical journey through these disciplines is deeply personal. Holding a degree in violin, classical music has not only profoundly influenced my professional path but also many of the examples chosen in this book. However, my appreciation for music transcends genres and cultures. From the intricate rhythms of jazz and the masterful productions of pop to the raw energy of rock, and extending beyond Western music to embrace all cultures across the globe, music in its diverse forms possesses a universal capacity to touch our emotions and facilitate healing. Thus, the principles discussed in this book are broadly applicable, embracing music's diverse impact across genres, cultures, and individual preferences. This diversity underscores the therapeutic versatility of music – a critical point for policymakers, practitioners, and patients alike in advocating for and applying music's therapeutic effects. While delving into the intricacies of emotions and brain functions, I occasionally extend beyond direct ties to music. These explorations are designed for readers with backgrounds in neuroscience, psychology, or sociology and aim to provide a holistic perspective on music's impact on health and well-being. This book, however, is crafted for non-linear exploration – you do not have to read it page by page; feel free to jump directly to sections that most intrigue you or seem most relevant to your interests. Whether you are drawn to a specific topic, a particular disease, or a unique aspect of music therapy, each section offers valuable insights. I hope this book not only informs but also inspires your personal journey through the therapeutic effects of music, contributing to both your overall wellness and personal growth.

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