Lars Ole Bonde
Töres Theorell *Editors*

Music and Public Health

A Nordic Perspective

Springer

Music and Public Health

Lars Ole Bonde • Töres Theorell
Editors

Music and Public Health

A Nordic Perspective

Springer

Editors
Lars Ole Bonde
Department of communication
and psychology
Center for Research in Music and Health
The Norwegian Academy of Music
Aalborg University
Aalborg, Denmark

Töres Theorell
Karolinska Institute
Stress Research Institute
Stockholm University
Stockholm, Sweden

ISBN 978-3-319-76239-5 ISBN 978-3-319-76240-1 (eBook)
https://doi.org/10.1007/978-3-319-76240-1

Library of Congress Control Number: 2018940010

Printed on acid-free paper

This Springer imprint is published by the registered company Springer International Publishing AG part of Springer Nature.
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Contents

About the Editors and Contributors

Editors

Lars Ole Bonde, PhD, FAMi is a professor in music therapy at Aalborg University (DK) and professor II at Center for Research in Music and Health (CREMAH) at the Norwegian Academy of Music (N). He is a certified music therapist and clinical supervisor. In the 1980s and 1990s, he worked as music and concert producer. He served as associate editor of the *Nordic Journal of Music Therapy* until 2017. His current research projects include music and public health, music therapy for people suffering from schizophrenia, and monographs on the Danish composers Bent Lorentzen and John Høybye. He has published numerous books, book chapters, and articles on the theory and practice of music therapy, music psychology, music education, music theatre – and music and health.

Töres Theorell, MD, PhD is a professor emeritus at the Karolinska Institute. He served as a clinician (cardiology, internal medicine, occupational medicine, and social medicine) from 1967 to 1990. He became a professor, from 1995 also director, of psychosocial medicine in 1980 at the National Institute for Psychosocial Medicine in Stockholm. At the same time, he was appointed professor of psychosocial medicine at the Karolinska Institute. Since his retirement in 2006, he has served as a scientific consultant at the Stress Research Institute, Stockholm University. His stress research has been focused on physiological mechanisms, epidemiological observations, and controlled intervention studies. He has been doing research on culture and health since the 1980s, mainly in the music area. He has written more than 450 articles in international scientific journals and authored and edited several books, including *Psychological Health Effects of Musical Experiences*: *Theories, Studies and Reflections in Music Health Science* (2014).

Contributors

Anne Haugland Balsnes, PhD is a professor of music and manager of research at University of Agder and Ansgar University College at Kristiansand, Norway. Her PhD from the Norwegian Academy of Music was based on the thesis *Learning in Choirs – Belcanto as a Community of Practice* (2009). This study was followed by the postdoctoral project *Choral Singing for a Better Life*, which resulted in the book *Choral Singing – Ideal for Human Fellowship?* (2014). In addition, Balsnes has written several articles on choral singing and health in journals and anthologies. She is also a practicing conductor and singer.

Margarida Baltazar, PhD studied clinical psychology in the University of Lisbon. She has worked as a psychologist and as a piano teacher, and the motivation to conciliate the sciences of the mind and music has been long present. She completed her doctoral studies at the Department of Music, Art, and Culture Studies of the University of Jyväskylä. Her research interests include affect self-regulation through music, musical emotions, and wellbeing. Her work has been focusing both on theoretical and daily life implications of music use.

Kari Bjerke Batt-Rawden, PhD is an associate professor at the Institute of Health Science, Norwegian University of Science and Technology (NTNU). She is head of the master study in "Health Promotion and Community Care" at NTNU. Batt-Rawden also belongs to the Sociology of the Arts Group [SocArts] at Exeter University and the Research Group "Health Promoting Communities" at NTNU in Gjøvik in conjunction with Center for Health Promotion Research at NTNU in Trondheim. She has published several international, scientific research papers on links between music, health, and quality of life, mainly based on the use of qualitative methods and a salutogenic perspective.

Lars Rye Bertelsen, DMTF music therapist is a doctoral student in the Doctoral Program of Music Therapy at Aalborg University, Denmark. He founded and runs a private music therapy clinic community since 1999, and holds a position as a clinician and research assistant at the Music Therapy Research Clinic at the Aalborg University Hospital – Psychiatry since 2005. He is co-inventor of "The Music Star" application, and he regularly gives lectures and workshops on music as communication, as well as being a part-time professional musician.

Ola Ekholm, Msc is a senior advisor at the National Institute of Public Health at the University of Southern Denmark, Denmark. His main research interests are in the areas of using population-based health surveys in epidemiological studies. He has authored/co-authored more than 85 research papers in international peer-reviewed journals. He is also a supervisor for several PhD students.

Tora Söderström Gaden, MA-MT music therapist graduated from the Norwegian Academy of Music in 2015 with the masters thesis *Song, Interplay and Bonding* based on her music therapy practice project at a public health clinic with first-time mothers and their young infants. She is currently working at Akershus University Hospital's Pediatric Department, where she is also leading a project on adapting international models and methods for music therapy in neonatal intensive care in the context of Norwegian health care and neonatal intensive care units. From 2018 PhD student at GAMUT, Bergen.

Eva Bojner Horwitz, PhD, RPT, and Reg DMT is a medical doctor, a cultural health researcher, and specialized in psychosomatic medicine and creative arts. She is a co-founder and director of education at the Center for Social Sustainability, CSS, Karolinska Institutet (KI) Sweden and researcher at the Department of Clinical neuroscience KI and Department of Public Health and Caring Sciences, Uppsala University. She is anchored in interdisciplinary research, has doctoral students, authored scientific articles, books, and book chapters. Her research expertise covers interventions with dance/music/theater, alexithymia, creative achievement, embodiment, emotional regulation, nature-related activities, fairy tales, public health, and quantitative and qualitative research methods.

Stine Lindahl Jacobsen, PhD is an associate professor and head of the music therapy MA Program at Aalborg University, Denmark. She co-founded and runs a cross-sector knowledge and research center for culture and health in Denmark (Nordjysk Center for Kultur og Sundhed). Jacobsen regularly lectures at universities in Germany, Austria, Spain, and Norway. She has published various articles and chapters in the area of families at risk, standardized assessment tools, and effect studies. Jacobsen actively takes part in public and political debates on the use of music and other art disciplines to promote health.

Steinar Krokstad, PhD is a professor of social medicine and general manager of the HUNT Research Center, Department of Social Medicine and Nursing, Faculty of Medicine and Health Sciences at NTNU. He is a former specialist in general medicine and now a specialist in psychiatry and general practitioner at the Clinic for Mental Health and Substance Abuse, Levanger Hospital, Helse Nord-Trøndelag HF. He is the deputy chairman of the National Center for Cultural Health and Care in Norway. He holds a doctorate in social epidemiology/social medicine, and his research projects include socioeconomic causes of bad health, illness, mortality, and disability plus research in psychiatric epidemiology and national health services. He has contributed several book chapters in community medicine, social medicine, and medical sociology. He has been heavily involved in health prevention and promotion, in cooperation with local, regional, and national authorities in Norway.

Bente Irene Løkken is a PhD fellow in culture, activity, and mental health at the faculty of medicine and health science at the Norwegian University of Science and Technology (NTNU), and employed at Nord University, faculty of nursing and health science. Her current fields of interest are public health, epidemiology,

and register data. She is currently lecturing on the subject public health and health-related behavior. The title of her PhD project is "Leisure time cultural activities in the population; mortality, sickness absence and use of health care - cohort analyses from the HUNT 3 Survey (2006-08)". The main objective of the PhD is to investigate how attendance in leisure time cultural activities, both receptive and creative, affect different aspects of health in the population: mortality, sickness absence, and use of health services.

Helle Nystrup Lund, DMTF music therapist and PhD student at the Unit for Psychiatric Research at Aalborg University Hospital, Denmark. Her area of research is depression and music listening to improve sleep quality and to promote health. She is an experienced teacher and clinician, and co-inventor of the Music Star app. She publishes in the area of music therapy and music listening and has presented to international audiences for health professionals. She is also a professional jazz pianist and composer, performing with her jazz trio "Helle Lund Trio." Combining workshops and performances she has toured in Norway, Finland, Scotland, and France.

Dafna Merom, PhD is a professor of physical activity and health at Western Sydney University, NSW Australia. She is an internationally known expert in the area of physical activity epidemiology, measurement, surveillance, and promotion. Merom has been awarded more than $3.5million research grants, including being a recipient of the National Health and Medical Research postgraduate award. These grants have been used to develop and evaluate interventions to promote active living to various population groups and in various settings including the first international large-scale study on the effect of social dancing on falls and cognition among older adults.

Vegar Rangul holds a PhD in public health and general practice, behavioral epidemiology. He is a specialist in physical activity epidemiology and has extensive experience with the use of large epidemiological data sets to resolve issues tied into the health effects of physical activity and its interaction with general health behavior and cardiovascular disease risk in particular. He has expertise in behavioral epidemiology, measurement of physical and cultural activities, and epidemiological population studies. He is the chairman of The Norwegian Centre of Arts and Health and project leader of the National Educational Program in music-based environmental treatment, with integrated use of music, song, and movement.

Hanne Mette Ridder, PhD, DMTF music therapy supervisor, is a professor and head of the Doctoral Program in Music Therapy at Aalborg University, Denmark. She has long clinical experience in dementia care, leads research on music therapy in dementia and neurocognitive disorders, and is engaged in various international research networks. She has published extensively, and recently edited a Danish/Norwegian book on music therapy in healthy aging – *Musikkterapi og eldrehelse* – together with Dr. Brynjulf Stige.

Suvi Saarikallio, PhD Docent of Music Psychology, works as a senior researcher at the Center for Interdisciplinary Music Research, Department of Music, Art and Culture Studies, University of Jyväskylä, Finland. She is an expert in music psychological research on emotion regulation, youth psychosocial development, and emotional wellbeing. After completing a PhD in Music Education in 2007, Saarikallio has rapidly established an internationally acknowledged research career combining approaches from music psychology, music therapy, and music education, using methods from qualitative theory development to motion capture, neural measures, and psychometrics, and actively publishing her work in the top journals of the field.

Karette Stensæth, PhD is professor in music therapy at the Norwegian Academy of Music, where she also works as the director of the Centre for Research in Music and Health (CREMAH). Her research interest is broad and involves social and philosophical perspectives on music and health. Stensæth has edited several books in the CREMAH Series. Her fresh monograph is on responsiveness in music therapy improvisation inspired by Mikhail Bakhtin's ideas. Stensæth has much clinical experience as a music therapist working with children and youth with special needs. She sings, plays, and composes music in her spare time.

Brynjulf Stige, PhD is a professor of music therapy at the University of Bergen and Head of GAMUT – The Grieg Academy Music Therapy Research Centre, University of Bergen & Uni Research Health, Norway. Stige has founded two international peer-reviewed journals: *Nordic Journal of Music Therapy* and *Voices: A World Forum for Music Therapy*. He is currently the founding leader of POLYFON knowledge cluster for music therapy, a partnership that enables collaboration between research institutes, hospitals, municipalities, and counties on service development, research, education, and dissemination. Stige's research explores relationships between music therapy, culture, and communities of practice.

Erik R. Sund, PhD is a research scientist at the department of public health and nursing, NTNU, and an associate professor at the faculty of health sciences and nursing, Nord University. He has a PhD from NTNU on the topic social and geographical inequalities in health. He has a wide range of research interests within public health but with a particular interest in statistical modeling. He is currently involved in research on gene-environment interactions and cognitive and mental health in the elderly.

Gro Trondalen, PhD, special education teacher, music therapist, fellow of AMI, is a professor in music therapy and former director of the Centre for Research in Music and Health (CREMAH) at the Norwegian Academy of Music in Oslo, Norway. She is an experienced music therapy clinician and supervisor, and maintains a private practice in The Bonny Method of Guided Imagery and Music (GIM).

Fredrik Ullén, PhD is a professor of cognitive neuroscience at the Department of Neuroscience, Karolinska Institutet, since 2010. His research focuses on the neuropsychology of expertise and creativity, i.e., the various brain mechanisms that allow us to perform at a very high level within a specific field, using music as a model domain. Methodologically, his team combines neuroimaging with experimental psychology and behavior genetic analyses. He is currently heading a larger research program *Humans Making Music* that involves collaborations with the Swedish Twin Registry and other research groups both within and outside Sweden. In addition to his career as a scientist, Ullén is active as a professional pianist. Professor Ullén is a fellow of the Swedish Royal Academy of Music (2007) and Academia Europaea (2017).

Chapter 1
Introduction

Lars Ole Bonde and Töres Theorell

History

In November 2011, Copenhagen hosted the first conference on music and public health held in a Nordic country. The European Public Health Association (EUPHA), Association of Schools of Public Health in the European Region (ASPHER) and the Danish Society of Public Health organized the fourth European Public Health Conference in Copenhagen 10–12 November, with more than 1300 participants and many hundred presentations. The specific event at the Royal Library on 9 November was an invited preconference (1 of 20), arranged in a collaboration between the Department of Communication and Psychology/Music therapy at AAU and the Center for Research in Music and Health (CREMAH) at the Norwegian Academy of Music, Oslo.

'Music as/in therapy' is well established as an evidence-based treatment modality all over the world, so there is a solid knowledge base documenting how and why music can help people with physiological, psychological, existential, spiritual and social problems and pathologies. In the context of the present book, 'music therapy' is defined as music interventions and services delivered by a qualified/certified music therapist. The context is often clinical, with the aim of promoting the health of patients or clients with mental or physical diagnoses. However, 'community music therapy' is often practiced in broader, non-clinical contexts and with undiagnosed clients or citizens. 'Music and health' is a wider field where the use of music experiences to promote health and wellbeing in everyday life is studied and promoted, also by other agents than qualified music therapists, e.g. nurses, social

L. O. Bonde (✉)
Department of Communication and Psychology, Aalborg University, Aalborg, Denmark
e-mail: lobo@hum.aau.dk

T. Theorell
Karolinska Institute, Stress Research Institute, Stockholm University, Stockholm, Sweden
e-mail: tores.theorell@su.se

L. O. Bonde, T. Theorell (eds.), *Music and Public Health*,
https://doi.org/10.1007/978-3-319-76240-1_1

workers or musicians. 'Music and public health' is a new, interdisciplinary field where social scientists, medical doctors, music psychologists, music therapists, musicologists and health professionals are creating a knowledge base for the focused application of music experiences and activities in a public health perspective.

The purpose of the 2011 preconference was to present a state of the art by three international keynote speakers and to give an overview of the Nordic perspectives on music as health promotion and to discuss problems, achievements and ideas.

The programme was divided into three sections: (1) international perspectives on music and public health; (2) perspectives on music and public health as seen from the Center for Research in Music and Health, Oslo; (3) Scandinavian perspectives on music and health, as seen by leading researchers from Norway, Sweden, Finland and Denmark. Different theoretical and practical models were presented, and recent research results from clinical and non-clinical areas were related to the public health perspective.

For decades, keynote speaker Suzanne B. Hanser (Berklee College of Music, USA) has studied how music therapy can assist in the fields of childbirth, depression, and cancer. She examined how evidence-based strategies developed in her clinical practice and documented in research can be translated to the general public. This is exemplified in the book *Manage Your Stress and Pain through Music* (Hanser & Mandel 2010). Hanser sees one important role of music in modern health care in bringing homeostasis to the autonomic nervous system, and her vision is the integrating of music therapy into mind-body approaches, giving it a role in the new science of integrative medicine.

Raymond MacDonald (Glasgow Caledonian University, Scotland) is a professor of music psychology and also a saxophone player specialized in free improvisation. In his keynote he presented an overview of current conceptions of improvisation, highlighting a number of key themes in relation to improvisation and musical identities within a health-care context. Musical identities refer to the multitude of ways in which interactions with music (both listening and playing) can influence our sense of self, and MacDonald demonstrated how participation in improvisation workshops can have health benefits for cancer patients, highlighting the potential of music activities as innovative psychological interventions in a health-care setting.

Stephen Clift (Sidney De Haan Research Centre for Music, Arts and Health, UK) set out from the fact that the WHO Commission on Social Determinants of Health, under the leadership of Michael Marmot, gave no consideration to the role of music, or the wider field of creative arts, as potential contributors to positive health and wellbeing. Clift presented evidence from many studies documenting how group singing can promote psychological and social wellbeing and help society to meet a number of key challenges linked to an increasingly elderly population and the growing burden of long-term conditions. The big challenge is how to organize such activities on a sufficient scale to have relevance for public health and to assess potential cost savings to health services from a health economics standpoint.

Researchers from the Center for Research in Music and Health, Oslo (Even Ruud, Gro Trondalen, Karette Stensæth and Torill Vist) gave examples of how the center works to increase public knowledge and awareness of the health potential of

music activities, in everyday life as well as in clinical and community work, with people suffering from health deficits. Researchers from Sweden (Lasse Liliestam), Norway (Brynjulf Stige), Denmark (Hanne Mette Ridder) and Finland (Suvi Sarikallio) reported from research studies documenting the health benefits of singing, playing and listening to music for diverse non-clinical groups, including adolescents and the elderly, and for people with physical or mental problems.

'Health musicking' was highlighted as a concept integrating the many different perspectives and results of the studies presented (Stige 2002; Stige and Aarø 2012; Bonde 2011). To take part in musical activities and share experiences with other people is a resource with a health dimension and potential well documented in small studies from music therapy, music psychology and music ethnology.

The preconference provided a sharing of promising results and ideas which concluded that the big challenge in a public health perspective is to transform the existing knowledge into practical initiatives in the field of health prophylaxis and prevention. This requires large controlled studies, not only correlational but also longitudinal and cohort studies, and thus, cross-disciplinary networking and funding in a much bigger scale than now is necessary.

The 2011 event was followed up in two ways in the following years. In Denmark, a collaboration between Music Therapy AAU and the National Institute of Public Health (SDU) was initiated, leading to the research project documented in Chap. 2 of the present book. In the Nordic countries, different initiatives provided a continuation and expansion of the new field. The most important initiatives were a conference on Culture and Public Health in Stockholm in November 2014, documented in an anthology (Bojner Horwitz et al. 2015), and the formation of a Nordic Network for Research in Music and Public Health at a CREMAH seminar in Copenhagen in August 2016. Many of the researchers participating in these events have contributed to the present volume, and they also presented a round table at the EUPHA conference in Stockholm, November 2017. All in all, this is a very promising story about how researchers with very different backgrounds have found together to develop the truly interdisciplinary study of music and public health.

Part One: Epidemiological Research in Music and Public Health in the Nordic Countries

In some Nordic countries – especially Sweden and Norway – there has been a tradition of investigating the influence of engagement in cultural activities and events on health; however, until recently there has not been a specific focus on music behaviour and music as a health resource. The three chapters in part one present new, empirical researches from Denmark, Norway and Sweden, with focus on association between music and health.

Chapter 2 (Ekholm and Bonde) presents a Danish epidemiological study of music as a health resource in the life of adult Danes. Data originates from the Danish

Health and Morbidity Survey 2013, the latest survey in a long row. The survey was based on a random sample of 25,000 adult Danes (response rate, 57%). Besides standard health-related questions, the survey included for the first time eight specific questions addressing the informants' music making, their use of music in daily life and beliefs of music as a health resource. The results include an overview of musical behaviours and beliefs in the adult population and an examination of associations between singing/playing and various health-related outcomes such as quality of life and mental and physical health. Finally, the study takes a closer look at self-rated health of adult amateur musicians and professional musicians versus nonmusicians.

The study revealed significant differences in health behaviour between nonmusicians, amateur musicians and professional musicians. It was also documented that active amateur musicians reported a significantly better health than all other groups. A clear association was found between attending live concerts and reporting good health, and also believing that music activities and experiences can help to stay healthy.

Chapter 3 (Løkken et al.) reports recent findings from the Norwegian HUNT study, which are ongoing, large-scale investigations of health in the region of Trøndelag. Creative activities, like playing an instrument, singing or creating theatre performances, can affect biological processes in the human body and have shown to have a positive health effect on patients. Previous studies from the Nord-Trøndelag Health Study (HUNT), Norway indicate that people who are culturally active experienced better self-reported health, was more satisfied with their lives and experienced less anxiety and depression.

The chapter focuses on the association between engagement in performing music, singing and acting with self-rated health and all-cause mortality in the population. The main research question is whether people who actively engage in music, singing and acting have better self-rated health (SRH) and survive longer compared to those who do not participate in these activities on a regular basis. Secondly, possible gender differences are explored. Preliminary results suggest that women not engaged in playing an instrument, singing or acting had an increased risk for having poor self-rated health compared to women who actively participated in such activities. Men not engaged in playing an instrument, singing or acting had increased risk of dying compared to men who actively participated. In summary, these findings suggest that participating frequently in music, singing and acting appears to increase subjective self-reported health for women and reduce all-cause mortality for men. Stimulating such activities may have positive health effects in the population.

It is of great importance for social interactions and for wellbeing, and consequently also for health, that a person is able to interpret and differentiate, as well as to describe and communicate emotions. In psychosomatic medicine, difficulties in such abilities are labelled *alexithymia* (introduced by Sifneos, 1973, 1996). An alexithymic person has difficulties in the communication of feelings. This may lead to poor communication with others and also to reduced capacity for fantasizing and symbolic thinking.

Chapter 4 (Theorell and Ullén) takes as a point of departure that questions about possible relationships of repeated musical experiences to emotional skills have not been studied extensively. The chapter explores two studies of such relationships and also the extent and nature of such relationships in relation to health and creativity. The main research question is whether there is any correlation between a life with music on one hand and the ability to handle emotions on the other hand.

The study sample was recruited from the Swedish Twin Registry. The participants were in the ages 27–54. All analyses were adjusted for age. In the genetic analysis, there were 8110 subjects who had valid information about zygosity, alexithymia score and number of hours of music practice. An interesting finding in the first study was that those who reported a high number of hours of music practice and who had practiced ensemble had a particularly low risk of having a low alexithymia score. A high level of musical activities throughout life, particularly when including ensemble playing or singing, was associated with a lowered level of alexithymia. In other words, musicians are in general and particularly if they have had extensive experience of ensemble playing or singing better at handling emotions than others.

The second study examined the statistical correlation between achievement in cultural activities in general and alexithymia. The results showed both for men and women that high achievement in writing and music contributes statistically independently of one another and of other artistic achievements to a low alexithymia score. Together, the studies based upon a large cohort of twins from the Swedish Twin Registry have shown that musicality and ability to handle emotions are interrelated and that these variables are associated with likelihood of working in creative occupations. The patterns are different for men and women.

Part Two: Empirical Studies as a Basis for Theories on Music and Public Health

The public debate about music's possible role in public health has sometimes been confused because discussants in the public debate have diverging definitions of the concepts they are using and also widely different theories underlying their statements (Theorell 2014; Bonde 2015). We, therefore, feel that it is necessary to base our discussions regarding relationships between music experiences and health by introducing theories based upon empirical research.

Chapter 5 (Theorell) presents knowledge on music biology relevant to public health. It draws on results from a number of research projects that illustrate how researchers reflect on links between music and public health. Music enters the brain in a different way than do conversations based on words, and since the brain tends to react more directly and rapidly to music, this may sometimes create a basis for surprise and unexpected reorientation in life. The body seems to react in specific ways to specific emotions – resulting in various combinations of psychophysiological

states (dilated or constricted arteries, increased or decreased variation in heart rate, accelerated or decelerated pulse, elevated or lowered blood pressure, increased or decreased sweating, etc.) when music induces or amplifies emotional states. In addition, the body adapts its hormones and its immune system to the musical experiences.

Experiments with school children have shown that musical collective experiences (having fun with music together and making pupils collaborate with one another) can contribute to an improved social environment possibly favouring learning at school. A calmer atmosphere is mirrored in reduced saliva cortisol levels. Modern recording techniques have made it possible to record immediate online physiology during musical experiences, for instance, in the gastrointestinal system (changes in peristalsis), in breathing patterns and in the arteries as well as during intense experiences such as flow and goose skin. Music in the gym, during choir singing and in clinical applications such as choir singing for patients with chronic respiratory disease is discussed in the chapter. One conclusion is that there is extensive knowledge about immediate reactions during music experiences, but that long-term biological consequences of repeated musical experiences (such as choir singing or instrument playing in groups once a week for years) have been understudied although such research is beginning to emerge.

Chapter 6 (Ridder) presents theories on healthy aging and prevention of behavioural and psychological symptoms of dementia. First of all, general concepts like healthy aging, personal growth and loneliness are discussed from general societal points of view. After this, the terms growth and cognitive reserve are discussed. According to Erikson, old age is a period for achieving integrity, which contributes to wisdom and is opposed to stagnation and despair. It is argued that cognitive reserve to a great extent determines the existential consequences of aging, in particular premature aging of nerve cells. It has been observed that individuals who are able to perform well in cognitive tests in spite of severely aged brain cells have a better connected brain, with mechanisms able to reorganize around the Alzheimer disease pathology. This is the main element in cognitive reserve. Biological observations indicate that an important vehicle in cognitive reserve is norepinephrine, which is upregulated by the crucial factors education level, mental activity, social engagement and enriched/novel environments.

It is emphasized that sensory decline is a neglected part of dementia. Disturbed sensory processing makes it very challenging to understand sensory input and to make sense of situations and interactions. This is in particular the case where listening to and practicing music gets into the picture. To perform and to actively listen to music is a complex cognitive process, and it is argued that this may serve as training for the brain with beneficial effects on daily functioning. Practicing a musical instrument involves movements of parts of the body in a temporal context, as does dancing.

Music is described as having the power to unlock memories and other cognitive capacities in Alzheimer's disease. The regions normally involved in musical memory encoding are strikingly well preserved in Alzheimer's disease. The conclusion is

that listening to and performing music has a great potential for preserving functions in old age, even among subjects with Alzheimer brains.

Chapter 7 (Saarikallio and Baltazar) introduces and discusses the concept 'social-emotional health' which is fundamental for the healthy adaptation to the environment. Good social-emotional skills are vital throughout the lifespan, and they can predict mental health and adaptation to society. The development of these skills is especially relevant during adolescence. During these years, music listening serves as a forum for peer group identification and for friendship formation and stability. Social-emotional competence is a positive and wider concept than alexithymia (discussed in Chap. 4). Social-emotional competence is an amalgamation of two approaches to noncognitive competence – emotional intelligence and social intelligence. The authors state that despite music's intrinsic connections to social and emotional experiences, the evidence base linking music engagement to general social-emotional competence is still relatively sparse. But several interesting examples from recent research are presented. For instance, in an experimental study with random control design, musical training made 6-year old children better than their peers in the control group to identify difficult emotional expressions in speech prosody.

The strongest link between music and social-emotional competence in research so far has been through emotion regulation. The observed interrelations between the used strategies and the observed symptomatology point to favouring the use of music for self-reflection, reappraisal and distraction in contrast to avoidant and ruminative emotion regulation strategies. The authors suggest that the concept social-emotional competence could be used as a theoretical framework to clarify the conceptual divergence in the field.

Chapter 8 (Stige) on 'health musicking' introduces a wide view of public health. The 'public health' concept underlying this chapter includes but goes beyond population prevention of disease. It is pointed out that public health strategies are based in the human rights, so that social justice, participation and empowerment are integral rather than additional goals.

Extensive experiments with strategies for implementation of music therapy within mental health services in Bergen, Norway, are described. In Norway in 2015, a new initiative came from the government: all health trusts were instructed to develop medication-free services to patients preferring such treatment. The health trust in Bergen with public health responsibility for several hundred thousand people is the first health trust with systematic implementation of music therapy services. In this process collaboration with local musicians, organizations and culture authorities is central.

The concept 'health musicking' is introduced to communicate the idea that relationships between music and health could be understood as situated processes of participation. Such processes evolve inside and outside conventional music therapy practices. Health musicking is defined as the appraisal and appropriation of the health affordances of the arena, agenda, agents, activities and artefacts of a music practice. The necessary components *arena, agenda, agents, activities* and *artefacts* are discussed. The importance of reciprocity in musicking is emphasized.

Participation in a social and situated activity is considered central to our understanding of how music could be relevant for human health.

Despite an increasing amount of primary and review studies in the field, it still remains uncertain how and under what conditions change strategies and interventions most effectively can be translated and exchanged to health professionals and integrated in their organizations. Knowledge regarding how governance is managed and carried out in health-care services and public health work is needed. In such processes, partnerships might represent alternatives to vertical hierarchies and horizontal demarcations, but they are not without their own limitations and problems. Experiences from the so-called POLYFON knowledge cluster for music therapy are described and discussed.

Chapter 9 (Stensæth) on music *as* participation is devoted to questions regarding music's potential to reduce isolation and thereby improve public health. The point of departure is that social isolation and loneliness are about to become the biggest public health threat of our age. There is a great need to explore new ways to fight social isolation and to find meaningful ways for people to be with others while engaging in participation, both on an individual level and on a community level. Music, especially through the development of the discipline of music therapy, tries novel ways of approaching some of the challenges connected to social isolation.

It is emphasized that loneliness and social isolation are not individual phenomena. Social isolation is characterized by an absence of social interactions and social structures and engagement with wider community activities or structures. Loneliness refers to an individual's personal, subjective sense of lacking connection and contact with interactions to the extent that they are wanted or needed. A third aspect which is not very often used in discussions is inaction which refers to a state where individuals choose or are unable to take part in social action and for various reasons are disconnected from concepts of 'we-ness' and civic society. Social isolation and loneliness have been associated with lower reported life satisfaction, alcoholism, suicide and physical illness. Analyses of morbidity and mortality show stronger associations with social isolation than with loneliness.

There is still little research on the connections between music and participation with the attempt to reduce isolation. The interest in the positive effects and values of the connections between music and participation has however increased enormously over the last two decades. On a community level, there is a growing tendency to view music as a source for successful interventions for participation. On the individual level, music is revealed as an instrument in the repertoire of 'self-technologies', which aims at regulating our bodies, emotions and cognitive orientations. People use listening technology as a way to cope in their everyday lives. Some studies show that the music listening practices among youngsters, who are often the greatest music consumers, becomes health promoting when it helps them cope and regulate their feelings.

Part Three: Music as a Prophylactic Resource – Examples of Projects and Initiatives

A major challenge in the new field of music and public health is to transform knowledge from epidemiological studies and inspiration from theory on the relationship between music and health into practical projects for clinical as well as non-clinical groups, providing new treatment initiatives for the first and prophylaxis plans for the last. There is a lot of evidence to build upon, both from music therapy delivered by qualified music therapists (Kamioka et al. 2014; Li et al. 2015), from music medicine delivered by music therapists, nurses and doctors (Bonde 2015; Bradt, Dileo & Shim 2013) and music and health delivered or planned by a wide range of agents (Ruud 2013; Theorell and Kreutz 2012). In the final part of the anthology, illuminating examples of 'health musicking' are presented. They are all based on ongoing or finished empirical studies.

Chapter 10 (Söderström Gaden and Trondalen) explores ways in which musicking can support new parents and their children during the first year of life. It also examines the health promotion potential of a carefully designed music therapy programme. The chapter is based on a study at a public health clinic that was part of the Norwegian primary child services. Nine first-time mothers (and their infants) were invited to attend a weekly music therapy programme for 2 months. The group of participants was non-clinical, and the explorative, qualitative study was inspired by new, developmentally informed theory, as well as context-sensitive theory related to the development of a motherhood constellation in a contextual setting. Data included semi-structured interviews undertaken after the programme was concluded. The interviews were analyzed using interpretative phenomenological analysis (IPA), focusing on each participant's description of her experiences.

Results indicate that the mothers experienced positive development at a personal level, both within their relationships with their children and in relation to their everyday lives. The study also shows that the music therapy group at the public health clinic had the potential to increase mother-infant interaction and bonding and to support and empower first-time mothers in their new role. The emergence of a social network as a result of their shared participation in the programme was another result reported by the participants. The study documents how participation in a music therapy group can promote health in both mother and child. Supporting and strengthening parents during their child's first years of life using music therapy methods could be an important part of public health work in the future.

Chapter 11 (Balsnes) discusses the question 'How can choral singing promote public health?' Possible answers are based on analyses of choir members' stories about choral singing, drawn from various qualitative studies using participant observation and qualitative research interviews. The selected 'cases' are very different; the singers in question have varied backgrounds and current life situations, and the choirs they sing with are quite different with regard to purpose, level, repertoire and methods. Nevertheless, the singers explain that participation in choral singing has contributed to bettering their lives and thus improving their health.

The singers' stories are analyzed on the basis of the following questions: What is the meaning of the singing for the participants? What is it with choral singing that allows for a beneficial impact connected to health? What conditions must be present? And what characterizes the benefits that choral singing provides? The main objective of the chapter is the discussion of how choral singing can be a resource in public health work. Theoretical perspectives from music therapy and sociology of music illuminate the discussion, especially Ruud's categories concerning the relationship between music and quality of life and Stige's concept of *health musicking* (presented in Chap. 8).

Chapter 12 (Bojner Horwitz) takes as point of departure a sad fact that stress and burnout are common issues in the workplaces of our health-care institutions today – problems that must be addressed by organizational leaders. The chapter considers how the development of empathy can be one way of dealing with this complex issue by easing not simply the symptoms of stress and burnout but also addressing one of the causes of it.

Drawing on theories of mirroring, emotional brain and embodiment, the author examines how the combination of music and movement facilitates access to the emotions of others and helps people to better understand their experiences. It is also discussed how the training of empathy can be introduced into health care through programmes of cultural activities that facilitate an exploration of how the body can be used to increase awareness of one's own emotions and those of others. This work contributes to the growing body of evidence for how artistic programmes offer value to health care. The chapter shows how promotion of greater empathy as a practice of embodied leadership within the organization can contribute to the creation of a working environment that is 'humanized' through a culture of care.

Chapter 13 (Jacobsen, Lund and Bertelsen) describes the recent development within the field of arts and health in Denmark, zooming in on the use of music in a specific 'arts on prescription' model carried out in the Aalborg Municipality in an ongoing project (2017–2019). After a brief overview of established arts and health strategies in Scandinavia and the United Kingdom, the authors concentrate on a Danish project called 'culture vitamins' and its use of music and music interventions. Political issues, applicability and future research are discussed. In the chapter, the concept of 'music intervention' includes theory and practice from two different fields from clinical practice: 'music medicine' and 'music therapy'. 'Music medicine' is mainly a stimulus-response focused model whereas 'music therapy' is a psychodynamic humanistic model focused on interpersonal communication.

Based on guide experiences and statements from participants – citizens on long-term sick leave due to anxiety, stress or depression – it is illustrated how music listening in this specific framework, with the guidance of music therapists and the use of a specific music medicine application 'The Music Star' can be used to develop new coping strategies.

Chapter 14 (Batt-Rawden) presents and discusses a new approach to promoting health and quality of life in local contexts by teaching participants to use music as a 'technology' of health and self-care through the steps and actions of 'The Fellowship of Health Musicking Model'. The main purpose of this chapter is to increase

knowledge as to how musical activities can promote mental and somatic health, hence to be considered important in public health matters. Secondly, how "The Fellowship of Musicking Model" may be used as a health promoting initiative. The *model* builds on a novel musical health promotion procedure developed by the author in 2007 as part of a PhD project. The aims of the study were to explore the role and significance of music in the life of men and women with long-term illnesses in or through different life phases, situations, events, issues and contexts. Secondly, to increase knowledge on how participants, through exposure to and exchange of new musical materials and practices, may learn to use music as a 'technology of self' in relation to health and healing.

The longitudinal study involved 9 men and 13 women, aged between 35 and 65 and was a pragmatic synthesis of elements of ethnography, grounded theory and action research. Eight in-depth interviews were conducted with each participant and open narratives were elicited from each of them, using a topic guide, two single CDs and four double compilations. Through involvement in this model, self-awareness and consciousness may be enhanced through the informal learning process, hence be adopted as a coping strategy independent of age, gender, diagnoses, illnesses and cultural differences. Health benefits from musicking may reduce stress, anxiety, depression and the need for medication, building coping capabilities, social inclusion and renewed strength. The model may contribute to a wider understanding of musical activities as a method or strategy in public health, health promotion and rehabilitation.

Some final words on the writing style in the book: We have allowed the authors to choose freely between writing in the first or in the third person. Some chapters cover similar or related theoretical material. We have inserted cross-references where relevant, in order to increase options of 'dialogue' where this could be relevant for the reader.

References

Bojner Horwitz, E., Hogstedt, C., Wistén, P., & Theorell, T. (Eds.). (2015). *Kultur & Folkhälsa: Antologi om forskning och praktik*. Stockholm: Tolvnitton Förlag.

Bonde, L. O. (2011). Health Musicing - Music Therapy or Music and Health? A model, empirical examples and personal reflections. *Music and Arts in Action, 3*(2), 120–140. Retrieved from http://musicandartsinaction.net/index.php/maia/article/view/healthmusicingmodel.

Bonde, L. O. (2015). Music and medicine and music therapy in hospitals – an overview of practices and evidence. *European Journal of Integrative Medicine, 7S*, 2. https://doi.org/10.1016/j.eujim.2015.09.012.

Bradt, J., Dileo, C. & Shim, M. (2013). Music interventions for preoperative anxiety. *Cochrane Database of Systematic Reviews 2013, Issue 6*. Art. No.: CD006908. https://doi.org/10.1002/14651858.CD006908.pub2.

Hanser, S. & Mandel, S. (2010). *Manage Your Stress and Pain Through Music*. Milwaukee: Berklee Press Publications.

Kamioka, H., Tsutani, K., Yamada, M., Park, H., Okuizumi, H., Tsuruoka, K., et al. (2014). Effectiveness of music therapy: A summary of systematic reviews based on randomized

controlled trials of music interventions. *Patient Preference and Adherence, 8*, 727–754. https://doi.org/10.2147/PPA.S61340.

Li, H.-C., Wang, H.-H., Chou, F.-H., & Chen, K.-M. (2015). The effect of music therapy on cognitive functioning among older adults: A systematic review and meta-analysis. *Journal of the American Medical Directors Association, 16*(1), 71–77. https://doi.org/10.1016/j.jamda.2014.10.004.

Ruud, E. (2013). Can music serve as a "cultural immunogen"? An explorative study. *International Journal of Qualitative Studies on Health and Well-being, 8*(1), 20597. https://doi.org/10.3402/qhw.v8i0.20597

Stige, B. (2002). *Culture-Centered Music Therapy*. Gilsum NH: Barcelona Publishers.

Stige, B., & Aarø, L. E. (2012). *Invitation to community music therapy*. New York NY: Routledge.

Sifneos, P. E. (1973). The prevalence of 'alexithymic' characteristics in psychosomatic patients. *Psychother Psychosom*. *22*(2), 255–62.

Sifneos, P. E. (1996). Alexithymia: past and present. *American Journal of Psychiatry*, 153 (Suppl. 7), 137–14.

Theorell, T. (2014). *Psychological health effects of musical experiences: Theories, studies and reflections in music health science*. Dordrecht: Springer.

Theorell, T., & Kreutz, G. (2012). Epidemiological studies of the relationship between musical experiences and public health. In R. A. R. MacDonald, G. Kreutz, & L. Mitchell (Eds.), *Music, health, and wellbeing* (pp. 424–435). Oxford: Oxford University Press.

Part I
Epidemiological Research in Music and Public Health in the Nordic Countries