Music and Health

A Comprehensive Model

Lars Ole Bonde, Karette Stensæth, Even Ruud

FOREWORD

Music has increasingly become recognized as a provider of emotional regulation; it is also recognized as a promoter of agency, empowerment and meaning, as well as a source for community involvement. Also, due to technological advances, such as the internet and smartphone, people are using music to proactively regulate their moods in everyday life.

As a growing field of research and evidence originating from the discipline and practice of music therapy, the broader concept of "music and health" is opening towards an everyday practice of healthy uses of music. In doing so, this text presents the state of knowledge about music's regulatory functions, as well as music therapeutical practices within humanistic, cognitive/behavioural, and psychodynamic traditions, how music is related to community building within community music therapy, as well as music making in for example bands, choirs, and orchestras. How music is applied in medicine as well as educational settings will be important to notice, as well as how music and noise are parts of our soundscapes affecting our health.

Many scholars would term such health-oriented music practices as "health musicking", which is a key term in our outlining that will be presented in deeper detail soon. Based upon the concept of health musicking, individually based, as well as initiatives at institutional and larger community levels, we will describe ways musical engagement has proven effectful in preventing and promoting health, well-being, and quality of life among a variety of target groups.

This text, which can be understood as an extended review article, seeks to give an overview of music and health as an evolving field by elaborating upon a model that maps out the most well-known and acknowledged health musicking practices and approaches. We have included a rich reference list for the readers to learn more about topics and perspectives of interest. Our presentation focuses on the healthy uses of music, as well as mentioning unhealthy use. In our framing, the Nordic perspective is more focused on health musicking than other perspectives, maybe because this is the one we know best and are most familiar with Behind this text is three music therapy professors based in the Nordic countries (two from Norway and one from Denmark). Together we constitute three fourths of the team behind the first Norwegian Centre for Research in Music and Health (CREMAH) at the Norwegian Academy of Music. We owe gratitude to our colleague, professor Gro Trondalen, the fourth member in the first CREMAH team, as well as to many other close colleagues and collaborators, both in and outside the Nordic countries. A special thanks to those who of you are engaged in the music and public health domain. We also want to thank Bill Matney for his review as well as Jocelyne Guilbault

and Harris Berger for their insightful editing and helpful suggestions at the early onset of the manuscript process. Finally, we hope many people will find our model and our reflections useful in the future discussion on how to frame and define the growing vital field of music and health.

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CONTENT

INTRODUCTION

To delineate music and health as a field, can be challenging, because it is still developing and expanding. In our understanding, the emerging field of music and health needs to be seen in relation to music therapy. Both as an academic discipline and a professional practice, music therapy has since its inception in the middle of last century expanded its interdisciplinary basis. This way, it has found new areas of practice, and gradually become relevant in the public health context. The field of music therapy, first as professional practice and shortly after with its inception as an academic discipline in the middle of late century, has expanded both in terms of new areas of practice, professional roles as well as in research and theoretical underpinnings. A significant recent development has been the disciplinary advancement from a clinically based music therapy to a broader concern for community music therapy practice, and the further expansion of the field into a general field of music and health. This advancement has particularly been strong in the Nordic countries, due to an emphasis on theoretical and empirical research, the formation of cross-disciplinary networks, systematic political involvement in the implementation of music therapy, as well as its foundation in the Nordic welfare and health systems.

HEALTH MUSICKING?

Stige (2002, 2012) coined the concept of "health musicking" inspired by Christopher Small's concept of "musicking" (Small 1998). Small asserted that music is not a thing, but rather an activity; "any activity involving or related to music performance, such as performing, listening, rehearsing, or composing" (Small 1998, 9). Musicking was introduced as a verb that encompasses all musical activity from composing to performing to listening to music on a smart phone to singing in the shower. Stige defined "health musicking" as "the appraisal and appropriation of the health affordances of the arena, agenda, agent, activities, and artefacts of a music practice" (Stige 2002, 2011, 2012). Arena, agenda, agent, activities, and artefacts of a music practice refers to areas of practice, objectives, musical approaches/methods, and instruments/tools.

By adding health in front of musicking, Stige offered a possible framework for a broader interdisciplinary combination of music, health, and wellbeing. Stige considered health musicking as a possibility to utilize the health possibilities or affordances, not only in special education or clinical settings, but in all areas of practice, not least in a broader community context, as well as in everyday life. This opened the field to an emergent 'community music therapy', encompassing areas of practice within child welfare service, criminal wards, substance use disorders, engagement in community music programs, local schools for arts and culture, and more. In effect, this expanded concept of the

affordances of health musicking has developed into the implementation of music therapy in the field of public health (Bonde and Theorell eds 2018).

This reorientation became a contribution to the development of a theoretical framework placing music therapy models and practices in a broader social context. This new understanding of how musicking can afford a number of health-oriented appropriations is in line with the 'health-illness continuum model' (Ogden, 2019), which describes how wellbeing is more than simply an absence of illness, but also incorporate the individual mental and emotional health. Also, Antonovsky's (1987) notion of health as a personal experience (and an ongoing process), rather than a biomedical state, is essential in our understanding. Stensæth (2013) reads that Antonovsky (1987) "connects health to the extent to which we perceive the world as *making sense*, and to our interest in experiencing a sense of coherence there".

This opening for a broader understanding of health and wellness introduced *well-being* and *quality of life* as possible goals for health musicking. Musicking could provide for a better quality of life through increasing our vitality, that is our bodily feelings, emotional awareness, and level of energy (Bonde 2011; Ruud 2010). Quality of life also involves a sense of agency and musical involvement, and mastery might become a tool for empowerment. Further, quality of life is highly dependent upon our relations to and involvement in other people. Thus, promoting musicking as a social resource or social capital in building networks among people will be highly significant. Not least, our quality of life is nurtured by an experience of meaning and coherence in life, as underlined also by Antonovsky, suggests Ruud (1997a, 2010, 2020).

Therefore, we understand health musicking as a social and an individual practice through which people use music experiences to create meaning and coherence in times of adversity. We could therefore say that health musicking comes to encompass all the ways in which music experiences provide health affordances (Stensæth 2013). Additionally, health musicking in our understanding evokes Aldridge's (2004) description of health as *performance*. Aldridge claims that "becoming healthy" is an intentional act aimed at balancing physical, psychological and social elements to create or enhance well-being and quality of life (Stensæth, ibid).

FROM HISTORICAL IDEAS TO A MODERN PROFESSION

Historically, music's power as a health potential is not new. In Western history, Greek myths and legends tell many stories about the wonders of music. Plato in particular, devoted broadened attention to the subject in his works *Republic* and *Laws*. A famous quote, wrongly attributed to Plato (but from the same tradition), says, "music is a moral law. It gives soul to the universe, wings to the

mind, flight to the imagination, and charm and gaiety to life and to everything" (Watson 1994, 45). This quote not only anticipates music's role as a potential health source in ancient times; it also suggests that music, because it is able to bypass reason and penetrate the very core of the self, is of special importance in so doing. Similar considerations on music and health can be found in philosophies from non-Western cultures, for example, China (Confucius), the Middle East, and Africa. (Further readings on the history of music and health, see Gouk 2000; Horden 2000; Kümmel 1977).

Yet, while our modern culture and history may be impressed by the reverberation from old myths and philosophical traditions pointing to music's "universal" and "harmonizing" effects, we warn against developing a scientific discipline on untested and uncritical support. The old Greek doctrines of Symbolism and Harmony, proposed by Plato and the pythagoreans are beautiful, but highly speculative and with little relevance for today's music science. For example, when Plato writes (in *Republic*, book VII) "It appears, I said, that as the eyes are designed to look up at the stars, so are the ears to hear harmonious motions; and these are sister sciences – as the Pythagoreans say, and we, Glaucon, agree with them?" he expresses a long living idea of analogy between intervals, mathematic proportions in music, and the so-called "harmony of the spheres" in astronomy.

However, Music therapy today is an academic and critical design of a subject, profession and practice based on the complexity that we are confronted with when artistic and humanistic research meets the biomedical requirements of empirical evidence. Music therapy is sometimes labelled as a multi-disciplinary field of discourse (Stige 2002, 2018), by that suggesting that music therapy works closely together with other disciplines, each drawing on their disciplinary knowledge. Sometimes music therapy is seen as a part of an interdisciplinary field, where knowledge and methods from different fields are integrated, using a real synthesis of approaches. When it is referred to as transdisciplinary, music therapy creates a unity of intellectual frameworks beyond the disciplinary perspective (see for example Bruscia 2014). And, lastly, when music therapy is viewed as cross-disciplinary, it is one discipline seen from the perspective of another. The disciplines that music therapy most often relates to in either of these combinations, are psychology, sociology, anthropology, neurology, education, psychotherapy, and medicine in addition to aesthetics, biology, and philosophy of science. Music therapy relates of course closely to musicology and can be seen as part of it (Ruud, 2016). And it certainly involves ethical aspects (Bonde 2009; Dileo 2021; Trondalen 2023).

Music therapy is also a complicated and multidimensional field, which makes it challenging to fit it into one accepted and universal definition. We think of music therapy as a fusion of art, science, and humanity, following Bruscia (2014) and Ruud (2010, 2020). Bruscia (2014, p. 10) says,

> as an art, music therapy is organized by science and focused by the interpersonal process. As a science, it is enlivened by art and humanized by the therapist-client relationship. As an interpersonal process, it is motivated and fulfilled through art and guided by science … music therapy has to be conceived in a way that embraces this multiplicity yet preserves its integrity.

Matney explores the concept of multiplicity further by dialoguing with philosophical and historical perspectives. He suggests that we open ourselves to focus less time on defining "what is" and more time on designing "what if," through the organization, creativity, and (post-) humanity of our work (Matney 2021, 20).

DEFINITIONS

Kenneth Bruscia is well known for his lifelong work on defining music therapy. The latest 2014 version comes as follows:

> *Music therapy is a reflexive process wherein the therapist helps the client to optimise the client's health, using various facets of music therapy experience and the relationships formed through them as the impetus for change. As defined here, music therapy is the professional practice component of the discipline, which informs and is informed by theory and research (Bruscia 2014, 36).*

However, as we can see, Bruscia defines the professional practice of music therapy, rather than the discipline. Stige (2007, 30) adds to the definition by proposing the following:

- Music therapy as discipline is the study and learning of the relationship between music and health.
- Music therapy as a profession is a community of scholar-practitioners who have a recognized training and competence qualifying for a social role (as music and health workers), with specific obligations and rights in relation to clients, colleagues, other professions, and the public.
- Music therapy as professional practice is situated health musicking in a planned process of collaboration between client and therapist.

In Bruscia's definition, the therapist and their relationship with the client are both vital. Music may be therapeutic without a therapist, however, and the field of music and health involves many practices

where this is the case. Thus, music therapy, regarded as a specific *discipline*, as Stige considers in his definition, has been an important source for the development of the umbrella field: music and health.

Music may sometimes be a source for health, also when a therapist is not present. This corresponds with ideas put forward by Gabrielsson who insists on a broad outlook upon the role of music: "Music is much more than just music" – the subtitle of his book (Gabrielsson 2011; see also Trondalen and Bonde 2014), by that suggesting that music has a broad and great impact on our lives, perhaps much more than we are and can be aware of. In his music psychology textbook (Gabrielsson 2020), several chapters are devoted to topics such as "strong music experiences", "music, personality and identity" and "the functions of music" in everyday life, in music therapy and music and health. A similar trend is found in contemporary (cognitive) musicology, where the study of music in interaction may even be a new paradigm, with the concept of embodiment playing a central role (Lesaffre et al 2017), as well as opening the doors towards "applied music" in health and wellbeing contexts.

THEORETICAL BACKGROUNDS

Evidence and explanation concerning the effectiveness of music in healthcare have been commonly sought by importing theories from psychotherapy, various treatment theories (see overview by Wheeler 1983, 2016; Ruud 2010), biomedical explanations, research on the music and brain, etc., as well as from music-centred theories based upon clinical practice within music therapy (Aigen 2014; Kenny 1982, 1989). Historically, we see a movement from a focus on music and health-work with individuals and groups. The early empirical works in music therapy (from 1950-70 ca), for instance, often focused on single case studies (Aldridge ed. 2005), and on individual treatment and personalized objectives (Silverman 2006). Later we see a development and a widening of the interest, towards a contextual focus on work with families, institutions, and communities: The individual and their needs must be understood in relation to situational circumstances.

HELP FROM BRONFENBRENNER'S ECOLOGICAL SYSTEMS THEORY

Ideas from Bronfenbrenner's ecological systems theory (Bronfenbrenner 1979), with micro, meso and macro levels may help to situate the practice of health musicking. Music therapy procedures on the micro level will here encompass face to face work with the individuals as well as to individuals in their immediate surrounding, such as the therapist, the family or teacher. Often, music therapists must address the broader milieu or environment in the institutions where they work, which will become a sort of "environmental music therapy", thus changing the immediate institutional context of the therapy, as will be discussed later. The meso level thus indicates how a larger context is involved in the work, such as the family, ward, the institution, a local community, or some agency beyond the

institutional context. More precisely, this level is defined by Bronfenbrenner as also referred by in Stige (2002, 130), as "the interrelations among two or more settings in which the developing person actively participates (such as the relations among home, school, and neighbourhood peer group for a child)". The macro level considers the broader cultural, institutional, social, or ideological context framing the music and health work, or at some point instigates measures to promote the field of arts and health. Often, changes at the macro level, such as in economy, health and treatment ideologies, new regulative practices coming from the health authorities etc., may influence both the practice and profession of health musicking. Also, psychoacoustics, sound environment and pollution etc. may have implication for initiatives at the macro level.

In the following, we will go deeper into our use and understanding of the Bronfenbrenner levels in our framing of health musicking.

MICRO LEVEL

On the individual level, theories from developmental psychology research on infants, developed by New Zealand biologist and psychologist Colwyn Trevarthen and researcher Steven Malloch have increasingly been of special interest and importance for music therapy (Malloch and Trevarthen eds. 2009). Also, American psychiatrist and psychoanalytic theorist Daniel Stern (1977/2002) and his concept of *dynamic forms of vitality* as a gateway to access the mental activity of others has been much referred to (Holck 2004; Trondalen 2016; Johns 2018; Jacobsen, Pedersen and Bonde eds. 2019, Ch. 2.3.3). "Musical parameters, such as accelerando, crescendo, fading and more, are used to define what constantly changing forms of vitality feel like in our bodies" (Johns, 2018, 6).

According to Stige (2002), protomusicality is a concept that is sometimes used in these contexts and "refers to the capacity for human beings, through the evolutionary process, to express and experience themselves through sound, and towards the organization of such processes" (ibid.). Trevarthen (2008) uses the term protomusicality about the musical art of infant conversation. It is when infant and partner are found to be sharing a subtle "musicality" of communication. In this, "infants move with rhythmic gestures that express motive states and changes of emotion and mood. (…) They are attracted to extended engagement with human gestures, and sympathetic to many emotions — resonating to the impulses and qualities of movement; imitating, seeking to play an active part in proto-conversations or playful duets of agency" (Trevarthen, 2008, abstract). Musicality here becomes more than what we normally define as musicality: it is communicating the vitality and interests of life in interaction.

Thus, Malloch (1999) and Malloch and Trevarthen (eds. 2009) introduced a theory of *communicative musicality*, which describes how the interaction between parent and infant is continually co-created with tonal and rhythmical and formal elements, which convey an emotional and motivational narrative about what goes on in the relationship (Johns, 2008). Several music and health studies refer to this theory (Pavlicevic and Ansdell 2009; Jacobsen, Pedersen and Bonde 2019, eds. Ch. 2.3.4). The theories of communicative musicality as well as of "primary and secondary intersubjectivity" (Stern 2010) have been very influential in many theories, not only in music therapy theory. These theories provide foundational knowledge about how infants and primary caregivers interact through micro-musical timing, intensities, and narratives in the process of developing intersubjectivity. Johns for instance, when referring to infant researchers (Papousek and Papousek 1981; Trevarthen 2008; Stern 2000, 1977/2002), says:

> *The view is that musicality is inherently communicative, enabling intuitive access to each other's affective states. Musical parameters such as changes in melodic and vocal intonation, rhythm, tempo, timing, pauses, and intensity appear as the first way humans communicate and share subjective states. When such communication is responded to the child's communicative capacity increases (Johns 2018, 5).*

Johns (2018, 5), then, by referring to Fernald (1985, 1992), Beebe et al (2005) and Bonde (2009), suggests that "musical parameters are concrete and basic features of the construction of human dialogue, implicitly enabling or inhibiting humans to co-create and share time meaningfully".

We think that Stern's theories have strengthened our understanding of the relations between different traditions of therapeutic care, especially when it comes to the role of intersubjectivity. However, there may be a danger in a – more or less romantic – belief in and an uncritical understanding of children as having a natural instinct for sound and music and identifying protomusicality with a natural gift" for music and musical interaction (Stige 2002, Ruud 2020). The landscape is complex and deserves continuous exploring and critical reflection.

MESO LEVEL

The meso level focuses on music as health for families, communities, institutional environments and more. Here, it is not just the interest on the care of the individual alone; rather it is the individual in context *and* the individual in relation to others and the context. The theoretical framework for meso level perspectives is found in theories such as community music (Bartleet and Higgins eds. 2018) and/or community music therapy (Pavlicevic and Ansdell ed. 2004; Stige and Aarø 2012).

Interestingly, Pavlicevic and Ansdell (in Stensæth, 2018) suggest the notion "collaborative musicking" to cover group music activities that explain the connection between our inherent musicality (nature) and our social musical practices (culture). Pavlicevic and Ansdell (2009, 369) write: "Collaborative musicking builds community through making music together" (They write musicking without the k, as the music educator David Elliot did in his early writings too).

In their model, Pavlicevic and Ansdell describe that social experience and musical experience activate the functions of1) human communication (in the understanding of sharing and being together), and 2) human collaboration. By fusing models for musical development and social development, they show how musicking is linked to social development (Stensæth 2018). According to Pavlicevic and Ansdell (2009), musical development *builds* on the universal human capacity; an inborn communicative musicality (cf. Malloch & Trevarthen 2009). They suggest that this universal human capacity, together with certain cultural contexts, is basic for the individual's ability to use the capacity (as or in musicianship). This musicianship in turn leads to active participation in music activities (musicking) (Pavlicevic and Ansdell (2009, Stensæth 2018). As described by Pavlicevic and Ansdell (2009), an individual's – or a population's – musicality may however be damaged. To "repair" it is difficult; it depends on the type of damage and the cultural possibilities to engage the individual in the community. Sometimes musicking in large groups is useful for the repairing. Sometimes, musicking to repair the more basic experiences on the individual level is needed (Pavlicevic and Ansdell (2009). It is our understanding that it is in such cases, that is in the repairing – or in a much-needed empowerment of personal relationships, that the expertise of qualified music therapists is sought for and needed. Procter (2011) introduced the concept of musicking as a sort of "social capital", referring to Bourdieus conceptual universe in discussing how "reparative musicking" may have a value in community building. We find these descriptions meaningful, in that it shows how therapeutic work, or repairing, can be active on both individual and social levels, and where one is often a consequence of the other.

Recent research has identified functions of music *as* participation (Stensæth 2018; Stige, 2004). The notion of health musicking, according to Stige (2018, 119) in fact communicates the idea that relationships between music and health are understood as *situated processes of participation*. Such processes evolve inside and outside conventional music therapy practices (see also Stige, 2002, 2004, 2012). Participation, then, may be considered central to human development and well-being for all. We find that participation in this sense is compatible with bioecological (Bronfenbrenner 1979) and cultural psychology (Cole 1998).

MACRO LEVEL

Today, we see a further broadening of the picture, where music and health is increasingly integrated into the wider public health arena, the macro level, which encompasses the health of the population as a whole, especially as the subject of government regulation and support. Public health strategies are often based in human rights, so that social justice, participation, and empowerment are integral rather than additional goals. Additionally, public health goes beyond population-oriented prevention and rehabilitation of disease to include healthy public policy that can create supportive environments and promote positive aspects of health (Stige, 2018, 115). We also see a growing tendency in music therapy research to elaborate upon traditional public health headings such as participation, democracy, life mastery and life quality, inclusion, and other areas (Krüger 2020; Rolvsjord 2010; Stensæth, 2018).

We have seen a growing understanding of how music experiences can be used in rehabilitation and as prophylactic intervention in public health (Bonde and Theorell eds. 2018). Rehabilitation and prevention initiatives call for many types of partnerships between professional agents from a number of fields, both at local, regional, and national levels. A good and successful example is the Norwegian *Polyfon Knowledge Cluster for Music Therapy*, where partners from research centres, music academies, hospitals, health trusts, municipalities and counties have developed their collaboration successfully (Stige 2018, 122), recently embracing the whole country. In the Nordic countries, there has been a special attention towards the public health potential of music (and other cultural) experiences and interventions, based on partnerships and collaboration between otherwise separate sectors in society. Keywords in the complex development of new music and/for health strategies are participation, relationship, and inclusion (Bonde and Theorell, eds. 2018).

In this expanded outlook on health musicking, musical life in general may take an interest in promoting health. MacDonald, Kreutz and Mitchell (2013) list four different musical arenas of major importance sharing an interest in musical participation as a public health means, although they possess different levels of expertise. These are: music education, everyday use of music, community music and music therapy (the latter with another smaller area of music medicine attached to it). We should also note how in contemporary (primarily Western) countries music therapy has grown into a profession with excellent educational programs, clinical practice of high credibility and with broad applications. Also, in some countries with state recognition, we find national recommendations and guidelines for the integration of music in the health care system (Jacobsen, Pedersen and Bonde eds. 2019).

EVIDENCE FOR HEALTH MUSICKING

While Bronfenbrenner's ecological systems theory is useful to show how health musicking operate on various levels, the field of music and health still lacks a big body of research and proof that music affects our health. The situation is however changing. The 2019 WHO report (Fancourt and Finn 2019) on the evidence base for arts and health interventions includes over 900 references, many of which refer specifically to the very latest publications in music therapy research. Here music activities are considered complex and multimodal health-promoting interventions comprised of multiple components that involve aesthetic engagement, involvement of the imagination, sensory activation, evocation of emotion and cognitive stimulation. A scoping review commissioned by the EC (Zbranca et. al 2022) includes 310 studies and suggests that "arts and cultural approaches can have a role to play within health and social care and policy". Much cited sources describe how music experiences exert a regulatory influence upon both mind and body that contribute to well-being and improved health and quality of life for everyone (Bonde 2009; DeNora 2000; Ruud 2016). The findings in the WHO 2019 report, which are based on quantitative data with qualitative research from the social sciences and broader health humanities, demonstrate that music can have an impact on both mental and physical health. In turn, this impact can be realized in relation to health prevention and promotion, as well as health management and treatment.

While the publication of the first WHO report on the evidence of the health benefits of the arts and subsequent appraisals have called for rigorous and inclusive research to guide practice and policy development across member states, a new report is in progress providing an overview of systematic reviews and meta-analyses placing greater emphasis on the contribution of the creative arts therapies (CATs) and arts with therapeutic intent (ArTI) (Karkou et al 2022). This report synthesizes and appraises the global evidence on the health benefits of the CATs and ArTI. Results from review of 510 systematic reviews and meta-analyses representing 4559 individual studies indicated a significant role for the CATs and ArTI in the prevention of ill health, promotion of health, and management and treatment of illness across the lifespan.

HEALTH MUSICKING – AN EXPANDING IDEA

We want to remind of that behind our perspectives lies our perception and assertion that music and health *are* closely linked in our pursuit of a good life. By accepting this as a basis for all, music therapists may claim that everyone should be offered music and that it can be an ethical obligation for them to work to make this happen. The vision of *The Centre for Research in Music and Health* (CREMAH), at the *Norwegian Academy of Music* by including its mission describes this as follows:

Music gives access to aesthetic and existential experiences that are profound to the human being as a whole. Music also engages identity work and social participation. Due to constraints and challenges related to illness, disability, or challenges connected to economic, cultural and social conditions/contexts, many people do not have access to music. CREMAH therefore argues that music is a valuable resource that should be offered to all human beings, alone and/or in groups: Music is a democratic right that belongs to all of us, either as recipients of music as an art form and cultural offer, and/or as active participants in music and musical activities, through music listening, singing and playing.

Summing up this introduction, we suggest that the concept of "music and health" is an expanding idea, opening towards various everyday practices of "health musicking" where music therapy is included. We might say that along with its expansion, the concept of music has in itself expanded. A premise behind such a claim is to recognize the understanding of music as both an object and a work of art as well as a social, participatory activity. In other words: music relates to the unique practices where and when any health musicking is taking place (Ruud 2016). We reject the traditional dichotomy between "autonomous art" and "applied art" and focus on "uses of music" which embraces both (Felski 2008). A further outlining of health musicking complemented with a comprehensive model first needs to be presented.

A COMPREHENSIVE HEALTH MUSICKING MODEL

We will now, after a short explanation, introduce a descriptive Health Musicking model, one that is based on Bonde's (2011) model. It is meant to show how many different types of musical experiences, activities and interventions can influence and promote affirmative and corrective bodily, cognitive, emotional, and relational growth and healing. The shape of the model is inspired by Wilber's (2000) quadrant of perspectives on human life: individual vs. collective; interior vs. exterior (Bonde 2001). In his quadrant Wilber (1999) maps four spaces – "I", "It", We", "Its" – to express four fundamental perspectives on any study subject: mind (subjective/inner) vs. body (objective/outer), and individual vs. social. (In the model, "body" refers to the biological organism. However, Wilber mentions that "body" can also refer to "the subjective feelings, emotions, sensations of the felt body" (610); In our case, "body" relates to the left quadrants.)

The four main objectives of health musicking (in the corners of the model) were formulated by Bonde (2011). The coloured themes, common for at least two quadrants, are inspired by Batt-Rawden, Trythall and DeNora (2007), and Stige (2012). We use the concept of "affordance", which was presented originally in J.J. Gibsons ecological theory of perception, while DeNora (2000) complemented it with the concept of "appropriation". DeNora (2000, 2011) in fact introduced the term "musical affordance" to the music sociology discourse, a notion that describes how music affects people in a way that is linked with their social and cultural context. She says that musical activity has the potential to afford a number of benefits for people, but these benefits are dependent upon how these potentials (affordances) are used (appropriated) and on the individuals and their contexts. And, how music is appropriated may vary from one person to another. While musical affordances are the properties and structures within music and musicking, musical appropriations describe how these affordances are understood and actually used by participants. The way in which a person seeks to use musical opportunities and experiences will in part determine what benefits will be derived (DeNora 2000, 2011). In other words, music presents a person with many affordances, and it can be appropriated in many different ways.

Our quadrants are presented below, quadrant by quadrant; they are supplemented with descriptions and then narrative examples from the three levels from Bronfenbrenner's social-ecological systems theory. At the centre of the model, we have sought to define some main objectives of health musicking as affirmative and corrective bodily, emotional, and relational experiences through musicking.

We underline that with this model, which we have discussed thoroughly in the process of developing this text, we do not intend to present an accurate model that is "truer" or better than other models. We also admit that it can be challenging to place a theme or a narrative in the right spot of the model. Sometimes themes that are on one side will fit well on the other side of it – or even on both sides. This is indicated by the arrows in the model, stretching the themes in various directions. Other people, either scholars or users, would perhaps reflect differently and place a theme or a case in another corner of the model. This is not exact science; rather it is fleeting knowledge, that is continuously changing and expanding. We believe however that the present Health Musicking model can serve as a rich overview of a growing field, one that can initiate fruitful dialogues on complex matters connected to music and health. In the end, it is these processes that help us see the areas in new, meaningful ways. And not to forget; it is the subjective and lived experiences of the health musicking outcome that is most important.

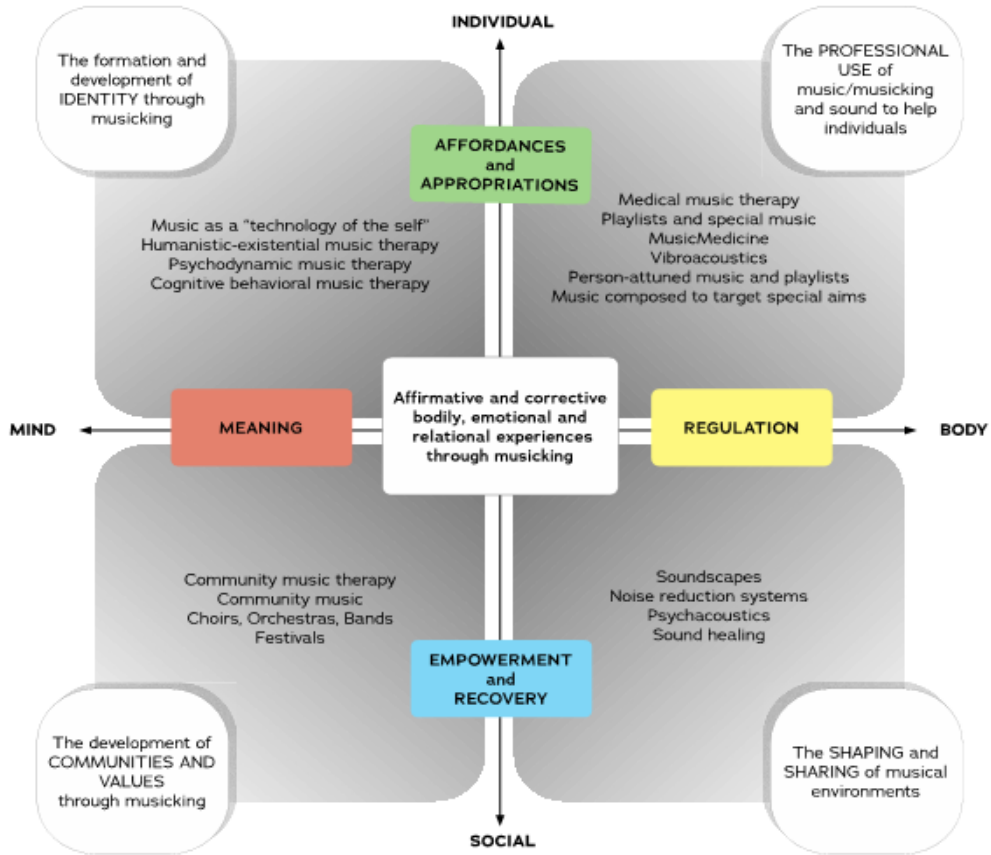

FIGURE 1 HEALTH MUSICKING. A DESCRIPTIVE MAP OF THE FIELD. © BONDE, STENSÆTH & RUUD 2023.

UPPER LEFT QUADRANT: THE FORMATION AND DEVELOPMENT OF IDENTITY THROUGH MUSICKING

This quadrant entails experiences with music pertaining to personal identity, emotional reactions as well as benefits from music psychotherapy within different clinical approaches, such as deriving from humanistic/existential therapy and psychodynamic approaches as well as behavioural/cognitive therapies. These directions within the psychotherapies forms the basis of distinct schools of music therapy (Bonde and Trondalen 2019). The humanistic-existential school refers to how music therapists refer to ideas within existential philosophy, or psychologists and therapists like Abraham Maslow and Carl Rogers (Abrams 2018). Therapists in the psychodynamic approach refer to analytical theory in the tradition from Freud, Jung or as mentioned, more updated theories, for example from Daniel Stern. The cognitive-behavioural tradition stands in a tradition from behavioural psychology stemming from B.F. Skinner, more recently updated by cognitive orientation and influences from Alfred Bandura and cognitive therapists.

At the micro level, health effects of music are afforded through music listening, playing, improvising, and performing, with or without a music therapist. At the macro level, we may also consider how music may become a part of a broader folk medicine. In addition to the interpersonal and communicative theories laying the foundation for the theories outlined in the introduction, theoretical approaches are also to be found for instance considering music as a technology of the self (DeNora 2000). This refers to the use of music as a self-regulatory practice, taking the concept from Michel Foucault. Musicking has as well afforded a free space, an asylum (DeNora 2013) or a "cultural immunogen" (Ruud 2020). Often building upon a resource-oriented approach (Rolvsjord 2010, 2014), the individual's strength and (musical) competencies make the starting points for musical collaboration and intervention in music therapy. An example on how the formation and development of identity can move through micro to meso and macro level, is found in the story of the band called *Ragnarock* (presented below)**.**

MICRO LEVEL

Research from music therapy, music psychology and music sociology have presented different perspectives on how music can serve as an integral component of identity building. Identity in this context is understood as "an academic metaphor for self-in context" (Fitzgerald 1993, 3), which means how a process of identity building must consider how individuals draws from personal and social experiences, their situatedness in time and place, as well as from values and a sense of meaning in life (Ruud 1997a, 1997/2013). Strengthening identity through musical involvement may provide the individual with competencies pertaining to agency, social skills, and emotional regulation, which may

relate to improved quality of life. For people whose identity is weakened due to sickness, damage or a demanding life situation, music's identity building agency can be crucial for their health.

In 2007-09 Lilliestam conducted an interview project where 24 adult informants reflected on music's role in their life (Lilliestam 2009, 2013). He concluded how music helps us to both shape and maintain an identity or a sense of self. And therefore, music can be an effective and useful means of both attaining and maintaining (what Lilliestam calls) "existential health" (Lilliestam, 2013, 33-34). Similar points can be found in Ruud's long-term project "Music and identity". Here, involvement in music seemed to promote vitality and emotional competence, agency and empowerment, a sense of belonging and a strengthening of social network, an anchoring in time and place, as well as a sense of meaning in life provided by transcendental experiences through music, all in all contributing to a better life quality (Ruud 1997b, 1997/2013). In both projects, there are references to Antonovsky's theory of "salutogenesis" (Antonovsky 1987). Ruud (2013) describes how Antonovsky in his research, "outlined how a sense of coherence in life made a crucial difference to health. One aspect of this general sense was how meaningful life was felt to be; other aspects included life's predictability and our ability to handle it" (see also Bonde et al 2013, Ruud 2020).

During the last decade, there has been an increased research interest in how music is used to regulate moods, energies, and emotions (Skånland, 2012, 2013; van Gothem and Sloboda 2011). Studies from music psychology and music therapy indicate how emotional regulation through music may provide beneficial effects upon depression (Saarikallio, Nieminen and Brattico 2012).

In the field of music therapy, there are numerous examples from special education, mental health, dementia care, somatic medicine etc. of how music may provide health related effects as documented by various sources of evidence ranging from case studies to randomised controlled trials (RCTs). Overviews of research and practice with different populations are to be found in recent handbooks of music therapy, such as *A Comprehensive Guide to Music Therapy: Theory, Clinical Practice, Research and Training* (Jacobsen, Pedersen and Bonde, eds. 2019), *The Oxford Handbook of Music Therapy* (Edwards ed. 2016), and *Music Therapy Handbook* (Wheeler ed. 2017).

To give some examples: In the area of mental health, a Danish RCT (Pedersen et al 2021) investigated the influence of music therapy and music listening on negative symptoms in schizophrenia. Participants were (individually) randomized to either individual multi-modal music therapy with a professional music therapist or to individual music listening to specially designed playlists together with a care person. Both interventions led to a significant decrease in negative symptoms. The receptive music therapy model *Guided Imagery and Music* and its offspring *Music and Imagery* where

one person listens to carefully selected music – single pieces or long programs – in a deeply relaxed state is used in four continents and has been developed and applied in several clinical contexts (Grocke and Moe 2015; Grocke ed. 2019).

MESO LEVEL

Considering musical events or interventions on the group or institutional level, we find how many music therapy projects have a performance dimension. Australian music therapists worked with cancer patients in songwriting and recording projects, where each participant contributed with a song to their children (O'Callaghan et al 2009). In another group project, Australian cancer patients worked together on the creation of an opera on life with cancer, performed by professional singers and musicians (O'Brien 2006). The libretto and music for the opera were written together with the patients using specialized music therapy songwriting techniques developed over eight years. The process helped the patients in their emotional work and in coping with their illness.

Music therapists and community musicians are forming rock band with persons with learning disabilities. One example is the musical story of the band Ragnarock (Stensæth & Næss 2013) involving lifelong dedication of members with intellectual disabilities and the instructors coming to rehearsals, performing on concerts, and going on band tours together. People with intellectual disabilities are often marginalized in society and there is a need to create after work activities to offer places of belonging. Just as important are the possibilities to become recognized in different roles, like musicians, that are acknowledged by the community. The story became very personal and unique for each member, of course, but in general, their musical life story was about the change of identity from clients to rock musicians. However, even more so it was the unique togetherness that made this band's story so happy, a togetherness that developed over years through a shared love of music, playing, and each other. Ragnarock is an example of how healthful personal and social capital can be created through bonding and bridging for people living with disabilities. Also, the band helped its members avoid isolation, which is today perhaps the biggest threat for people who are in vulnerable life situations (ibid).

Another example refers to rock band work in prisons, as in the band called *Me and THE BAND'its.* Tuastad and Stige (2015) write how these band members explore themes of community of practice, rock culture and identity construction in a rock band of ex-inmates. The band is embedded in rock culture, using alteration as a strategic repertoire for identity construction, and the identity of members is defined and reinforced in the community of practice, according to the authors (ibid.). Other examples of how musicking may alter the prison environment and help inmate to broaden their range of expression, is to be found in the research of Hjørnevik (Hjørnevik and Waage 2019).

Tuastad and his colleagues (2022) recently explored how band identity work also can be an arena to destabilize stigma. Illuminated by theory from sociology, music therapy, stigma research and recovery the researchers write how the results reveal the importance of the band as an arena to promote social capital through performance. The user perspective is important, and the message from the participants is to downplay the focus on mental illness and instead turn up the volume regarding the importance of making music.

Band playing is also used in mental health, often paired with the treatment philosophy of "recovery", a notion that is increasingly shaping mental health care policies. In the literature of recovery, there is a distinction made between clinical and personal recovery. Clinical recovery is to be found within the medical model, describing reduction in symptoms and increase in functioning. In contrast to the biomedical approach, which centres on clinical recovery, the second recovery approach emphasises *personal* recovery (Anthony 1993). Personal recovery is a personal process to live through, a way of living a satisfying, hopeful, and contributing life even with the limitation caused by illness (Ansdell and DeNora 2016, 218).

In a study exploring the value of music therapy in mental health care, users identified a taxonomy of four areas of experiences: "having a good time;" "being together;" "feeling;" and "being someone", i.e., being recognized as something else as a mental health patient. These core categories point towards music therapy as an arena that can be used by persons with mental health problems in their personal recovery process and in restoring social relations. Music therapy can contribute to the quality of mental health care by providing an arena for stimulation and development of strengths and resources that may contribute to growth of positive identity and hope for people with mental illness (Solli, Rolvsjord and Borg 2013).

There is a growing tendency to offer music therapy at home and/or in the communities to people with serious mental disorders, often also with drug problems, who rarely seek help themselves. Music therapy has increasingly been implemented in FACT teams in Norway the last five years as an important contribution to this multidisciplinary teamwork. Flexible assertive community treatment (FACT) is a well-documented model for providing outreach, simultaneous and comprehensive services for the patients. The recovery approach if referred to frequently in combination with music therapy in FACT, suggesting that changing one's attitudes, values, feelings, goals, skills, and/or roles in life requires a personal and most often a lifelong process of healing that encompasses emotional sobriety, mental health, physical health, and a sense of meaning in life from the individual. Music therapy has been highlighted as a form of intersubjective, relational activity that can promote empowerment and personal recovery. Skånland (2022) finds that as part of the recovery-oriented services of FACT, music

therapy appears to offer an arena for agency, empowerment, and social collaboration. Skånland suggests that the practice of social-musical skills and active participation in the music-therapeutic relationship are aspects that can be understood as ingredients for the development of social capital for the service user: Participation in music therapy thus appears as a potential steppingstone for participation in other social arenas and the community. She therefore finds it appropriate to view musicking as promoting musical skills and competency (c.f. Procter 2011) and as one of several elements in recovery capital (c.f. Cloud and Granfield 2008).

MACRO LEVEL

At the macro level, (i.e. as a micro-level phenomenon studied through population-level research methods) public health research documents how people use music in everyday life and what they think about music as a health resource. A Danish study (Ekholm & Bonde, 2018) showed that people use music for many different purposes in everyday life, and that age is an important variable. It also documented how active amateur musicians reported a significantly better health performance than both professional musicians and non-musicians – and that a majority of the population have a firm belief in music as a health resource. This belief was – not surprisingly – related to how much respondents attended live music performances.

The study also documented an association between parental support for providing music in childhood (privately and/or in institutions; formal and/or informal) and a later interest in music as a hobby or profession. Seen in the context of music education, it would be of importance to document a closer relationship between musical training and deliberate health musicking. In conclusion, Bonde writes:

> *These results somewhat contradicted cultural participation studies that found no extra benefit from active participation in cultural activities. The findings pointed toward a specific health potential of active musicking—especially for amateurs—and on this background, the researchers formulated a number of recommendations for public health initiatives (Ekholm & Bonde, 2018). Preventive and rehabilitative music activities and experiences (active as well as receptive, from small listening groups to community choirs) can fairly easily and with low costs be designed for special target groups, for example, men over 45 and, more generally, citizens over 65 (Bonde in Jacobsen, Pedersen and Bonde, eds. 2019, 229).*

These results are echoed in international studies (Cuypers et al 2011, 2012; Løkken et al 2018). Music experiences have been documented as a multi-faceted field with multiple health-related benefits for clinical as well as non-clinical populations (DeNora 2013; Gembris 2012; Bradt et al 2016; MacDonald, Kreutz and Mitchell 2012).

In an even broader perspective, “culture and health” has been elaborated as a field with fair documentation of cultural participation (receptive as well as active) as a cost-effective, but still only sparsely used public health resource. For example, a survey-based study, i.e. an investigation of a research question or hypothesis using data from new or existing registers for recruitment and data collection, documented that receptive engagement in arts and culture 3-7 times per year had a significant, positive impact on the mental wellbeing of people suffering from depression (Santini et al 2022). Other examples at the macro level are to be found in the lower left quadrant (see later).

UPPER RIGHT QUADRANT: THE PROFESSIONAL USE OF MUSIC/MUSICKING AND SOUND TO HELP INDIVIDUALS

This quadrant entails experiences with music, music therapy, and music medicine on the individual micro level involving biomedical, or bio-psycho-social approaches to health musicking. Playlists and special music, i.e. personalized and individually selected pieces or programs are administered in accordance with the situation and the musical identity and preferences of the patient. In this quadrant, musical effects on the brain, physiological responses or other measurable changes in the body are targeted. Music medicine research provides evidence for somatic health effects in this area (see later).

On the meso level, we will consider how music may provide a hospital or ward environment conducive to better health. Music medicine and medical music therapy often differ with respect to the role of the therapist in procedures where music is administered. In music medicine, music is often provided without the intervention or presence of a (music) therapist. In music therapy, as we have learned, the therapist *is* present, and the relation between the patient and the therapist becomes evitable a mechanism of change together with the therapist’s sensitive and improvisational facilitation of the musicking (c.f. Bruscia’s definition of music therapy). In itself, the therapeutic relationship stimulates interpersonal and intersubjective aspects of music therapy approaches. Theoretically, these aspects have furthered the development of a “relational music therapy” (Trondalen 2016).

For centuries, music has been used in many cultures to regulate arousal and mood. Modern technology, especially within recording and social media, has made it possible to use recorded music, when there is no live music or music therapist available. We saw (in the upper left quadrant) how this everyday use of health musicking, or the use of music is increasingly made available through personalized playlists and applied by the individual outside of therapeutic or medical contexts. “Music medicine”, administered by hospital staff, or “medical music therapy”, administered by a music therapist, on the other hand, is the professional use of music to help patients in somatic or psychiatric hospitals and institutions to alleviate pain, relax, improve sleep, and find more comfort in otherwise challenging situations.

MICRO LEVEL

At the Music Therapy Clinic, Aalborg University Hospital, music therapists developed a number of playlists in the years up to 2010. Firstly, they were offered to inpatients at the psychiatric hospital who could choose between them in small mp3-musicplayers. After 2010, the work resulted in the application *MusikStjernen* (*The Music Star*), first as user-friendly, intuitive offer presented on iPads, from 2021 also as a commercial app to download, useful for general relaxation or to improve sleep quality. In this way, *The Music Star* is a good example of entrepreneurship in music therapy practice that promotes therapeutic music processes. The playlists on the *Music Star* include a broad range of styles and genres, graded and arranged (by colour coding) by their degree of arousal. However, all playlists are within the "supportive" category of the so-called "taxonomy of therapeutic music" (Wärja and Bonde 2014), defined as "safe music" (low intensity and high predictability). The taxonomy includes three subcategories within each of the three main categories "supportive", "mixed supportive-challenging" and "challenging".

Recently, the taxonomy has been tested empirically, and a tenth category – "Connecting" - has been added (Bemman et al2023).

Many music therapy interventions have been documented as effective. However, it requires positive outcomes of expert-driven meta-reviews of primarily RCT studies to persuade hospital managers or health trust officers to implement such interventions in large scale programs. RCT studies are difficult, expensive and time consuming when the intervention is based upon the relations between a therapist and a client, and/or organized individually or in small groups. Nevertheless, Cochrane Reviews have documented a robust effect of music therapy and music medicine interventions in different clinical fields. See table 1 below (based on Bonde 2020; see also Jacobsen, Pedersen and Bonde 2019).

Clinical population Author (year)	**Number of studies and participants**	**Music therapy (or music intervention) has beneficial effects on...**
Acquired brain injury Magee et al(2017)	29 studies n=775	Gait, the timing of upper extremity function, communication outcomes and quality of life after stroke
Autism spectrum disorders Geretsegger et al(2022)	26 studies n=1165 (age: 2–12 years)	Social interaction, non-verbal and verbal communicative skills, initiating behaviour, social-emotional reciprocity, social adaptation, joy, parent/child relationship
Cancer Bradt, Dileo, Myers-Coffman, Biondo (2022)	81 studies n=5576	Anxiety, depression, pain, fatigue, quality of life (adults)
Dementia van der Steen et al(2018)	17 studies n=630	Depressive symptoms (music-based therapeutic interventions and music therapy)
Depression Aalbers et al(2017)	9 studies n=411	Short-term beneficial effects on depressive symptoms, anxiety and functioning
Mechanically ventilated patients Bradt and Dileo (2014)	14 studies n=805	Anxiety, respiratory rate, systolic blood pressure plus possible beneficial impact on the consumption of sedatives and analgesics
Preoperative anxiety Bradt, Dileo and Shim (2013)	26 studies n=2051	Anxiety before surgery, heart rhythm and diastolic blood pressure
Schizophrenia Geretsegger et al(2017)	18 studies n=1215	Global state, mental state (including negative and general symptoms), social functioning, quality of life.
Substance use disorder. Ghetti et. al (2022)	21 studies, n=1984	Beneficial effects on: substance craving, motivation for treatment/change.

TABLE 1. OVERVIEW OF SELECTED COCHRANE REVIEWS FROM THE LAST TEN YEARS: MUSIC THERAPY AND MUSIC MEDICINE WITH DIFFERENT CLINICAL POPULATIONS

Other examples can be found when music therapists apply music within different medical procedures, ranging from geriatric wards with people living with dementia (van der Steen et al 2018) to wards with premature born infants (Gaden et al 2022). The multi-site study Longitudinal Study of Music Therapy's

Effectiveness for Premature infants and their caregivers (LongSTEP) is an example of the last. Because premature infants and their parents experience significant stress during the perinatal period, this feasibility study explore if and how music therapy as a parent-led infant-directed singing may support maternal–infant bonding during this critical period. Findings indicate that parents of pre-mature infants are both willing to use their parental voice as a means of interaction and that they seek information about the aims and specific processes involved in it. Parents reported that they were able to transfer resources honed during music therapy to parent–infant interactions outside music therapy and recognized parental voice as a central means of building relation with their infants. This way parents experience and are taught to use singing and music in a way that is less stressful for themselves and their infants and in turn become a valuable health resource.

One recent study evaluated the stress-regulatory effects of a specific music therapy intervention on patients during cardiac device lead extraction procedures (Blichfeldt-Ærø, Halvorsen and Trondalen 2022). The patients received an individual preparatory session, lasting 30-45 minutes at the hospital ward the day before the invasive procedure. The session consisted of a dialogue between the patient and the music therapist, which included practical instructions and experiences involving music listening and coping techniques that enhance relaxation and stress management. Information obtained through the dialogue were used for individual facilitation of the intervention and the selection of music from a playlist from the *Music Star* app (see above). The music listening started during the preoperative phase before the patient entered the operation theatre. During the peri-operative phase, the loudspeaker was wrapped in a thin plastic bag, placed around the pillow containing a loudspeaker. The patients were also offered music listening during the post-operative period. According to the researchers, “no effect was found on patient satisfaction with pain management or average pain level. A decrease in patient anxiety of borderline significance was observed in the music therapy group” (Blichfeldt-Ærø, et. al 2020).

HOMESIDE is a study seeking to evaluate the impact of home-based caregiver-delivered music and reading interventions for people with dementia (Baker et al 2019, HOMESIDE). From their homepage it is described how the caregivers in the music groups were trained by professional music therapists, in a so-called in-direct music therapy model, where music therapists are modelling interventions and activities such as to be later performed by the caregivers (www.homesidestudy.eu). The interventions aimed to decrease behavioural and psychological symptoms of dementia (BPSD) as well as improve quality of life and wellbeing of both people living with dementia and their caregivers. The project also aimed to address the need for improved informal dementia care by training family caregivers to utilize a music or reading intervention with the person they are caring for. Although the 2018 Cochrane

systematic review (van Steen et. al. 2018) suggested that music-based interventions for people living in residential aged care were effective in reducing BPSD, the multinational trial HOMESIDE results showed that neither music or reading interventions delivered by trained family caregivers, were effectively beneficial in managing enduring BPSD or other health outcomes for community-dwelling persons living with dementia. Interestingly, there were statistically significant improvement in caregiver resilience at 90-days; however, these improvements were not clinically meaningful. Also, subgroup analyses suggest that people with moderate to severe dementia were more responsive to the music interventions than those with no or mild cognitive impairment, although this lacked statistical evidence for interaction. Further exploration is needed into why and how a caregiver-delivered music intervention did not achieve the same effects as previous research on music interventions implemented directly by trained music therapists outside a pandemic while also being sensitive to the caregiver burden (Baker et al 2023).

MIDDEL is another big multisite study that investigates if music interventions can reduce depression symptoms in people living with dementia. The study aims to determine the effectiveness of two different music interventions on the depressive symptoms of people with dementia living in residential aged care: group music therapy (GMT) and recreational choir singing (RCS). Recent findings published in the *The Lancet Healthy Longevity* based on the Australian arm's result of this multisite study showed that RCS reduced depressive symptoms at the end of the 6-month intervention period; positive effects were also observed on secondary outcome measures of neuropsychiatric symptoms and quality of life. Importantly, the singing intervention effects on depression outcomes were sustained in the long term (12 months) (Baker et al 2022).

Vibroacoustic therapy, the use of music and vibration in various medical contexts, is also worthy of note. Vibroacoustic therapy is a type of sound therapy that involves passing low frequency sine wave vibrations into the body via a device with embedded speakers. In Jyväskylä, Finland, a Nordic centre for training, treatment and research in vibroacoustic therapy opened in 2013, named after two of the pioneers Olav Skille and Petri Lehikoinen: *The Skille- Lehikoinen Centre for Vibroacoustic Therapy and Research* (VIBRAC). Two researchers from the centre have published an overview article on the development and present situation of vibroacoustic therapy (Punkanen and Ala-Ruona 2012). The journal *Music and Medicine* published a special issue on vibroacoustics in 2017 (Campbell, Hynynen and Ala-Ruona 2017).

MESO AND MACRO LEVEL

Offering music therapy in hospitals as a part of general environmental therapy, was defined by Aasgaard as: "A systematic process of using music to promote health in a specified environment inside or outside institutions" (Aasgaard,1999, 168; 2004). This would involve patients, their relatives, and the whole medical staff in performance activities such as bands or choirs. Performing music composed to lyrics produced by patients was supposed to further the communicative climate within the hospital ward. In an article by Canga et. al. (2012) it is proposed how Environmental Music therapy (EMT) is a non-invasive mind–body intervention that considers the physical, psychological, and cultural needs of patients, caregivers, and staff. In a study they used quantitative and qualitative analyses of the effect of EMT on patients, caregivers, and staff. The results revealed that EMT, involving the use of live music (bands, choirs) performed by patients, caregivers and staff, showed positive effects like reduced perception of hospital noise, and reduced stress level generally in patients and caregivers when applied in common and treatment areas of the Cancer Center, an outpatient infusion facility at a large inner-city hospital. According to them, "environmental music therapy attended to the immediate needs of patients and caregivers in a culturally sensitive way both prior to and during treatment". Their study additionally evaluated the effect of EMT's capacity to alleviate compassion fatigue and stress in oncologists, nurses, and other health professionals.

Children with cancer and other life-threatening diseases are often isolated in a hospital room for long periods. Aasgaard (2002) documented how songwriting could be an activity connecting the hospitalized child to both family, friends, and schoolmates, when songs were recorded and distributed enabling similar responses from the communities outside the hospital. Robb and colleagues (2014) developed a therapeutic music video intervention for adolescents and young adults undergoing stem-cell transplantation, supporting mastery, hope, and spirituality.

During the last five to ten years, we have seen the development of health musicking at Hospital at Home programs. On their websites, we can read that Hospital at Home is an innovative care model for adoption by health care organizations that "provides hospital-level care in a patient's home" as a full substitute for acute hospital care.[1] Hospital at home programs are not only effective in reducing complications and cutting costs; they personalize the care, and in so doing the health musicking may offer ways for the patients to communicate, share and deal with their own experiences of life and treatment. For example, by composing, performing, and recording songs, the patients are not

[1] http://www.hospitalathome.org

only supported in having a voice in their own stories; they can also communicate and share their processes with outside communities too. Steinhardt, Mortvedt and Trondalen (2021), in their pilot study investigating music therapy in a hospital-at-home setting for children in palliative care, found that families drew attention to the feeling of being isolated – yet connected due to music therapy. The authors state how the results also showed "the need for a highly skilled Music Therapist to support the families' complex and dynamic needs within a hospital-at-home setting". And they add that a dynamic music therapy program adapting not only to the patients' individual needs but additionally providing family-centered care that considered shifting locations, was crucial too.

Health and hospital systems are very different around the world, and thus is difficult to compare, for example, the role of music medicine and music therapy in American and Nordic hospitals. Some hospitals in the US have developed comprehensive music therapy program where music therapy is offered to hospital wards supporting neo-natal and pre-maturely born children, or to support for patients undergoing different procedures, such as brain scanning or chemotherapy. An illustrative example can be *Louis Armstrong Center for Music Therapy* at *Beth Israel hospital*, New York (Mondanaro 2020). Another prominent New York hospital with a music profile is *Beth Abraham* where Dr. Oliver Sacks worked for many years in clinical teamwork with Connie Tomaino and many other music therapists to help and improve the life quality of patients living with all sorts of neurological problems (Sacks 2008; Scheiby 2020).

The use of music activities or music performances to address the client's interaction with their physical or social surroundings (or both) in an effort to promote greater cognitive, affective, and behavioural health, are also common to see in institutions, hospitals and care homes. Some health musicking activities, for example open concerts for patients, relatives, and staff, special music therapy programs dedicated to staff wellbeing, collaboration with hospital clowns, that take place within these medical institutions may also be placed within the lower left quadrant, as will be explored below. A number of agents are engaged in music activities in hospitals and health care (Bonde 2020): *Music therapists* are specialized experts in the use of music experiences in many clinical contexts. They are also developing environmental services and train staff in the use of music and simple interventions in daily institutional practice.

In addition to the music therapists, then, other professions may be offering music to the clients. Sometimes, on the background of personal skills in music, or in-service training led by music therapists and other experienced health musicking professionals or health musickers. This will for instance be *nurses, physicians, and other staff members* that are administering music medicine interventions when these are based on recorded music. *Composers* may be involved in the creation of special music

medicine programs. *Professional musicians* may be involved when music medicine is delivered live, without explicitly stated treatment goals. They may be labelled *"health musicians"* (or "health musickers", Ruud 2011, 2020; "healthcare musicians", Koivisto 2022) as professional musicians with special skills and engagement in musical communication with patients in hospitals where they make specially designed performances for specific groups. There is no treatment component in their work, which aims at improving wellbeing and quality of life, but of course there may be a therapeutic effect of their work. It was documented in an RCT, where live music medicine was provided by specially trained musicians during lymphoma patients' chemotherapy (Bro et al 2019), that live music could decrease anxiety in the experimental group as compared to pre-recorded music and standard care.

Also, music/art institution staff, local health workers, and music volunteers can be involved in programs where specific target groups with health problems are invited to authentic music/art events with specially designed introductions and mediations. In UK and the Nordic countries, such programs are often offered as "Music/art on prescription", where citizens with health problems such as anxiety and depression are referred (by doctors or municipality agencies) to (typically ten weeks) of special, interdisciplinarity designed group activities, where concerts, community singing, art exhibitions and more are typical elements. *Other professional experts,* such as art designers often work together on the creation of special music applications to be used in hospitals and institutions. Compositions, music programs, and playlists may function as diversion or entertainment, however, they are created to provide increasing or decreasing levels of arousal to help patients regulate, especially patients who are restless, anxious or have sleeping problems (Lund et al 2022). In addition, *music educators* can be part of the hospital staff in paediatric wards where they often cooperate with music therapists on designing age- and patient-appropriate activities for children and adults. Their work is often guided by a school curriculum. However, their "embodied musical tact" may enable them to "operate in complex educational situations in paediatric wards" (Koivisto & Kivijärvi, 2020, 25).

Often, when approaches and studies are called music therapy or are performed by trained music therapists, they are music therapy informed. Dementia is an area that WHO defines as one of our times' biggest public health threats, a threat that in the western world will increase due to longer lifespan. WHO has therefore published a global action plan (Global action plan on the public health response to dementia 2017 – 2025), and one action plan in this is that 75 % of countries provide support and training programs for carers and families of people with dementia by 2025.

The aforementioned large HOMESIDE and MIDDEL studies (HOMESIDE, MIDDEL) are examples of medical and music therapy informed multi-cite studies where support and training programme through music can be helpful. Today there are too few music therapists to meet the challenges coming

with dementia, and there is therefore a need to combine all good health musicking sources to meet this challenge.

One smaller project related to the perspective in HOMESIDE and MIDDEL that received much public attention, involved a study on the singers in the very popular Norwegian TV-documentary, The Dementia Choir (based on the BBC program with the same title). The study's results showed positive tendencies on all health and quality of life measurements of all singers with dementia. The change in mood of the choir measured before the rehearsals compared to after showed significant positive change (Stensæth et al, 2022, see also Thompson et al 2021). The TV-documentary itself proved its power in actually *showing* and even more so *convincing* the public of the strong link between musicking and health. The series' effected in establishing many local dementia choirs in every corner of Norway, probably more than 100. It also increased the interest and understanding of music therapy and music and health research and the need for professionalism when working with people in vulnerable life situations, like people living with dementia.

At five university hospitals (in Denmark, Norway, and Sweden), the Nordic research project *Music and Imagery in Child Oncology* (MICO) investigates the effect of specially designed music narratives and "guided music journeys" with supportive music for children and adolescents hospitalized with life-threatening cancer. Preliminary results shows that the interventions have positive influence on side effects of chemotherapy, such as nausea and vomiting, in children aged 7-17, and that the music experiences can enhance the participants' inner resources, resilience and overall well-being (Sanfi and Bonde 2019).

Even if music therapy services have expanded in many clinical and non-clinical contexts, especially in the care of older adults with or without dementia, there are as of today – at least in the Nordic countries – not enough qualified music therapists to do the work in daily practice. Therefore, music therapists are often required to educate and train staff, families, and volunteers, and to share some of the more basic music therapeutic skills, as was mentioned earlier as "indirect music therapy": the therapist is there, but only in the background, indirectly, by supporting and supervising the one who oversees the health musicking activities. Indirect music therapy is for example tested out in the aforementioned HOMESIDE study, where the family caregivers are trained to use music in a health promoting way in the everyday life with their loved ones living with dementia. The family caregivers are for example taught by the music therapist how to use music that is known and loved by the person with dementia (so-called preference music) to destress and calm down or to activate and engage in movement or to support falling asleep or just help moving from one situation and condition to another. The health musicking approaches involve music listening, dancing/moving to music, singing,

or playing instruments, but the most important is to learn how, where and when the musicking suits each one of them.

At Aalborg University the research group behind the project "Person-attuned musical interaction (PAMI) in dementia care" has developed training manuals and teaching material for music therapists who train professional carers in the use of musical interventions in daily care practices, typically in nursing homes (Ridder & Krøyer 2022; Ridder et al., 2023; Krøyer, 2022). This is also a variation of indirect music therapy.

Although indirect music therapy is a much-discussed notion today, its idea is growing in importance. Manuals and training courses are developed and professionalized to improve well-being of people living with dementia, at home or in institution care (McDermott et al 2018, Krøyer 2022). In a public health perspective, and especially as public education, we expect such manuals and courses to become general knowledge, something we all will know to value, and learn how to use for the benefit of our own health, the community, and for life itself. However, while indirect models are valuable in that they support carers – both professional and at home-cares – we must add that clinical experiences and preliminary study results suggest that (direct) music therapy with professional music therapists are needed for especially vulnerable populations with poor health. Politically, it is important to understand this difference, for the society to secure professionally responsible services that offer optimal and sustainable health musicking practices for people in need.

LOWER LEFT QUADRANT: THE DEVELOPMENT OF COMMUNITIES AND VALUES THROUGH MUSICKING

This quadrant encompasses community music activities ranging from community music therapy approaches to amateur musical activities run by community musicians or taking place within informal music groups such as rock bands, orchestras, choirs, and folk music groups. Musical performance plays an important part in these activities and may take place as concerts or in festivals.

The introduction of community music therapy took place as a reaction to a more traditional clinical – biomedical or psychodynamic - approach to music therapy. With a greater emphasis on health promotion and health prevention musical activities are considered as providing experiences of competency, mastery, possibilities for social networking and local belonging. Also considering how musical resources are empowering qualities has led music therapists to align with user-oriented approaches within the treatment theory of personal recovery as witnessed within the field of mental health.

MICRO AND MESO LEVEL

Approaches within this quadrant are not primarily aimed at reaching participation at the individual level, although there is research that indicates how participation in amateur music activity may promote empowerment, self-efficacy as well as beneficial physiological effects, as for instancing when singing in a choir (Balsnes 2018; see also Clift and Hancox 2010, Clift et al 2010). Interviews with the participants in the orchestra in the refugee camp referred to below revealed how participation in the orchestra had led to better life quality among the participants concerning vitality and emotional regulation, sense of mastery and increased self-confidence, belonging and sense of meaning, and strengthening of Palestinian identity (Ruud, 2011).

Selecting, compiling, and sharing "participatory CDs" has been documented as a highly rewarding method to elicit and share study participants' life stories and stories of being well and being ill (Batt-Rawden 2012; Batt-Rawden and DeNora 2005; Batt-Rawden, DeNora and Ruud 2005). Based on these findings, a model has been developed to promote health and well-being in larger groups, for example in local communities, hospitals or health centers. The model is called "The Fellowship of Health Musicking". Facilitators such as nurses, general practitioners, social workers, or music therapists gather small groups of participants with health problems and teach them how to use personal music compilations (from CD's, Spotify or other resources) to share narratives of music's role in their everyday life. In a six-months process with six sessions, participants develop skills and knowledge on how to use music in their daily lives for enrichment, coping, and sharing (Batt-Rawden 2018).

Music therapists as well as community and healthcare musicians are contributing to health promotion through their involvement in a variety of amateur music settings. Participation in group musicking may afford processes of social bonding and bridging (Putnam 2000), transforming musical capital into social capital (Proctor 2011).

Norwegian community musicians have for many years been working in refugee camps in Lebanon among Palestinian children and youth. Throughout a long-term project lasting for more than ten years instruments are donated and instructors have been regularly commuting several times a year to build an orchestra (Boeskov 2017; Storsve, Westby and Ruud 2010).

Musical communities have been organized to establish meeting places for people struggling with disabilities ranging from severe physically and multiple handicapped to mental health challenges. In the form of musical cafés, opportunities are provided for listening and performing as part of the social gathering. An outstanding example is to be found in a long-term ethnographic project in London, where the music therapist Gary Ansdell and the sociologist Tia DeNora have documented a music

project among people with mental health difficulties taking part at a café connected to a rehabilitation and training center. Through a qualitative research approach the musical participation and performance history of a series of people are traced, focusing on changes in health and social status over time in relation to their musical activity (Ansdell and DeNora 2016). The project by Ansdell and DeNora documents how the performance and common musicking as part of the social gathering provided opportunities for all aspects of what has been named the CHIME (CHIME) framework for *personal recovery*.[2] This includes *Connectedness* (peer support and social groups, relationships, support from others, community; *Hope and optimism* (belief in recovery, motivation to change, hope-inspiring relationships, positive thinking and valuing efforts, having dreams and aspirations); *Identity* (rebuilding a positive sense of identity, overcoming stigma); *Meaning* (meaning in mental health experience, meaningful life and social roles, meaningful life and social goals); *Empowerment* (personal responsibility, control over life, focusing on strength).

Mental health problems and wellbeing are political issues in Nordic and Western countries. Especially in the public school system, wellbeing – or thriving – is an increasing problem: more and more children are excluded from their classes and school community because of behavioural and emotional problems. At the same time, several studies document that quality music teaching and music therapy can enhance wellbeing, mental health and improve social competencies in school children (Rickson and McFerran, 2014).

A Danish project, *Alle Kan Synge (Everyone Can sing)* has taken up this challenge, and over the last four years a prototype of "inclusive class choir" teaching has been developed: singing in class choirs help children in grades 0-3 (6 to 9 years old) take part in a school community with the potential of improving their quality of school life and mental health (Bonde & Ingerslev, 2022). The prototype will be tested in new schools 2024-25. Related projects are on their way in Sweden (Sånghälsa/Song Health in Schools), and Norway (SangBarsk/Singing in kindergartens and schools) (Strøm, Eiksund and Balsnes, ed. 2022, Sånghälsa, SangBarsk).

MACRO LEVEL:

In considering the macro level, we may notice the relation between culture and health as was highlighted by the Lancet Commision in its report *Culture and Health* (Napier et al 2014). The report gave a thorough analysis of how important it is to consider aspects of values when it comes to the field of health, although there are few references to how cultural activities actually may be performed.

[2] http://www.therecoveryplace.co.uk/chime-framework/

We know how an one-sided focus on biological well-being is insufficient and that cultural factors should be of key importance in our effort to maintain and promote health in the population. Considering health issues, we may not forget how poverty, cultural disempowerment, structural and symbolic violence, and a health system driven by profit, contribute to the continuation of global and local health problems and social inequality. It is crucial to create a sense of hope and meaning that supports future physical and mental wellbeing if people are to comply with recommended treatment. It seems important to create communities and meeting places that give participants an experience of safety, belonging, continuity of traditions, attachment to values, hope, acknowledgment, and senses of agency. Research points to how participation in cultural activities may be associated with good health, a satisfactory life, and a lower prevalence of anxiety and depression (Cuypers et al 2012; Bonde & Theorell 2018).

LOWER RIGHT QUADRANT: THE SHAPING AND SHARING OF MUSICAL ENVIRONMENTS

This quadrant encompasses how music and noise, and different soundscapes may confer healthy or unhealthy qualities upon institutions and environment. Various music technologies may be introduced to facilitate music production or performance, provide a user-friendly environment, or serve as an external device for musical expressions. Music may also play a role in national crisis pertaining to war, conflicts, or attacks of terror. Songwriting, group improvisation, concerts, or public performance of songs by large audiences may help participants overcoming loss and trauma. National media may play an important role in the transmission of musical events that serves national consolation and the representation of identities involved.

MICRO LEVEL:

Music technologies have come to influence the practice of health musicking utilizing the midi technology, recording systems, tablets and the many programs designed to perform, compose, and arrange music. For an early overview, see Magee and Burland (2008) and Magee (ed. 2014). Case examples are shown in Magee et. al. (2011). See also the assemble music technology by Skoog (https://skoogmusic.com/).

On the individual level, it is well documented how noise has negative effects upon our physical and psychological health. Modern soundscapes are causing hearing impairment, tinnitus, hypertension, ischemic heart disease, annoyance, and sleep disturbance (Gong X et al 2022). Among the most significant sources we find prolonged exposure to loud music together with noise coming from vehicles, aircraft, and industrial noise. Music therapists may be qualified to address issues related to environmental noise in institutions as well as in the local community.

MESO LEVEL:

In June 2022, music therapy students Cilla Jepsen and Mindaugas Dambrauskas from Aalborg University presented their "Denoiser" project at the Health HUB Innovation Award 2022. The "denoiser" idea is to transform noise from, for example, a hospital environment (monitors, for example) into something acceptable or even enjoyable – by adding music in synchronization with the noise. Such a "denoiser" is an excellent example of new music technologies that can create healthier soundscapes in otherwise health-threatening surroundings and milieus.

On the institutional level, research has demonstrated how people living in institutions are rightfully characterized as a "captive audience" (Kittay 2008), not given the opportunity to control their own soundscape. Stedje (2010) researched how elderly people living in institutions rather would have some peace and quiet, when this was not felt as isolating and leading to passivity. However, everyday life in the institution was often marked by unwanted screams, loud conversations, unwanted sounds coming from the technological environment and more.

MusicMind is an online platform with a large number of playlists, developed in collaboration with Danish music therapists. It is operated by the staff in care centers for the elderly, psychiatric patients, and people with different handicaps. Many of the playlists are curated to regulate arousal (low-medium-high) corresponding to the needs of the group in case (www.musicmindapp.me).

Over the last ten years we have also seen an interest from other creative disciplines in the use of sound and music as therapeutic sources in the development of our surroundings. In the Norwegian research project RHYME researchers from disciplines of architecture and design, informatics and music and health collaborated in addressing the lack of health-promoting interactive and musical Information and Communications Technology (ICT) for families with children with severe disabilities (Andersson, Cappelen and Olofsson 2014; Andersson and Cappelen 2014; Cappelen and Andersson 2014, Stensæth ed. 2014).

RHYME explored a new treatment paradigm based on collaborative, tangible, interactive net-based musical "smart things" with multimedia capabilities. The digital smart things were in this case designed as home-environment objects (for example pillows, carpets and toys) (see RHYME homepage for illustration). When the families touched, interacted and/or played with them, they would sometimes respond with sound, light and/or vibration. Their sound response could sometimes be rhythmic or melodic, imitating well-known instruments, and sometimes it could just imitate the voice of the players. Part of the idea was that the "smart things" could improvise and even surprise those interacting with them, and by that evoke initiatives and co-creation.

The goal in RHYME was to see if the musical interaction with the tangibles/smart things could reduce isolation and passivity and instead promote health and well-being among the families. Stensæth (2018b) observed how the families experienced the smart objects as active collaborators and not "just" as another technological thing which they could manipulate into a cause-and-effect reaction. This implied that the ICT had to match the family members' basic desire *to do* (action) *something* (activities) *meaningful* (intentional) together (*intersubjective and interpersonal*). It was also demonstrated how music therapy competency in human communication and interaction was significant for future developers of interactive media (ibid.).

Another fresh large study that is combining innovative technology and knowledge from multisite studies in music therapy and dementia is the Australian project called *Music Attuned Technology Care eHealth* (MATCH): A music based mobile eHealth**.** Researchers include experts in music therapy, human computer interaction, old age psychiatry (geriatrics), physiotherapy, speech pathology, occupational therapy, software engineering (artificial intelligence), and hardware engineering (wearable sensors and motion detectors). MATCH is a scalable eHealth program that tries to bridge the divide in access to music therapy services between regional and metropolitan Australia by embedding carers' training of music use for therapeutic benefit. MATCH will try to detect and interpret changes in agitation in response to music interventions by incorporating auditory and motion sensor monitoring of the behavioural markers (MATCH). Information derived from artificial intelligence will inform future music choices to match and then continuously adapt music characteristics to regulate agitation and other behavioural and psychological symptoms of dementia, across all stages of disease progression.

MACRO LEVEL:

Music therapists have been involved in major incidences affecting whole communities. What has become known as "trauma-informed practice in music therapy" (TIP) has highlighted how music may provide comfort and safety and empower people after traumatic experiences (Beer and Birnbaum eds. 2023). This may encompass clinical implementation at the micro level, but may as well involve social justice practice, as well as trauma work related to national catastrophes, such as acts of terrorism, mass-shooting, and earthquake at the meso and macro level.

Working with grief and loss at a macro level and in a public health perspective was demonstrated after the attack of terrorism in Norway, 22 of July in 2011. Through enstaging public singing, memorial concerts, transmissions of church concerts on national television, and more, music became a major help in overcoming the national trauma (Knudsen, Skånland and Trondalen eds. 2014). In

retrospection, Skånland and Trondalen (2014) say that in the grieving process that followed those terror events, music played a fundamental role at both a national and an individual level:

> *Group singing, memorial concerts and services, songwriting, and music sharing became important resources during collective and private reckonings with the shock, anger, and grief brought about by the attack. Nationally, music provided a tool for the expression of shared values and appeared to strengthen feelings of community. Certain songs acquired particular resonances and were repeatedly sung, played, shared, and referred to. Individually, people used music to express or contain a variety of emotions. People listened to music and composed new songs as a form for self-therapy, and shared music as a means of reaching out and of looking inward (ibid., no paging).*

During the COVID 19 pandemic we also saw how people in a similar way spontaneously used music to comfort and connect. While the Corona virus outbreak drove millions of people to shelter at home for long days of anxiousness and boredom, we experienced that people in many countries – and thanks to social media – took to their balconies, windows, and rooftops to sing to one another, to play music, and to lift one another's spirits while also applauding and show gratitude to their health-care workers (Howlin and Hansen, forthcoming).

Investigations into such protective effects of music have started to yield significant insights. In his latest book, Even Ruud (2020) refers to music as a "cultural immunogen". He defines this concept by defining music as a healthy lifestyle and a way of living associated with longer life and lower risk of illness:

> *Within the field of medicine or immunology, an immunogen is a specific type of antigen, or a substance, that is able to provoke an adaptive immune response if injected on its own. In health psychology, then, a 'behavioral immunogen' must be understood in a metaphorical sense, as a sort of protective behavior, as opposed to a behavioral pathogen – that is, a harmful behavior that is damaging your health (smoking, excessive drinking, driving without a safety belt, and so on)(Ibid, 2).*

Ruud explores four major, musically induced cultural immunogens, which are 1) vitality (emotional regulation), 2) agency, 3) connectivity (music as a social resource), and 4) meaning making through musicking.

Based upon research and documentation, as demonstrated in this review presentation, music and health – and music therapy in particular – has received much political attention the last five to ten

years in Norway. Due to systematic research, music therapy is now recommended in nine national guidelines in the *Norwegian Directorate of Health's* national professional guidelines (psychotic disorders, substance abuse care, palliation for children and young people, cancer among children, eating disorders, prematurely born, depression, drugs, dementia).

The Directorate recommends for example music therapy for people with psychosis and drug addiction, and highlights music therapy as an important contribution to drug-free treatment.

UNHEALTHY USES OF MUSIC

At the onset of the text, we mentioned that there are unhealthy uses of music as well as the healthy ones, which we have presented broadly so far. We have already anticipated that health musicking *as* participation can be seen as a valuable democracy source, which in turn, is health promoting for us all and our public health. The therapeutic use of music also involves some risks for mistakes and possibly harmful effects.

Although music therapists are obligated to understand and address mistakes and possible harm when it occurs, the field has been slow in recognizing the importance of reflecting on mistakes and possible harmful effects of music therapy (Gilboa and Haakvoort, 2022). Murakami (2021) has presented a Music Therapy and Harm Model (MTHM), which aims to conceptualize six potential sources of harm within clinical music therapy practice. Specifically, Murakami says, these potential sources include 1) the music presented, 2) the music therapist, 3) the therapeutic application of music, 4) the therapeutic relationship, 5) client-specific music associations, and 6) ecological factors.

While Murakami theorizes on harmful effects of music therapy, studies of health-related uses of music often refer to adolescents' everyday use of music. Adolescents, when compared to adults are more likely to immerse themselves in emotions as anger and sadness through music (Dingle, Sharman and Larwood 2019). However, caution must be taken not to stigmatize certain musical forms or to overlook cultural diversity.

Saarikallio and colleagues (2015) presented their development of the "Healthy-Unhealthy Uses of Music Scale", based on an empirical study. In this, they refer to a relationship between adolescent listeners' musical engagement and reports of depressive symptoms. Their study further reveals how some kinds of repetitive listening combined with excessive rumoring, i.e. by repeating negative thoughts, may have harmful effects upon mental health (Saarikallio et al2015). The authors argue that music therapists need to be conscious about the differences between 'healthy' and 'unhealthy' engagements with music (Gold, Saarikallio, Crooke and McFerran 2017; McFerran 2016; McFerran and Saarikallio 2014; Saarikallio, Gold and McFerran 2015). McFerran (2019) warns however against a dichotomous, binary conceptualization of health, nothing that her earlier suggestion of "healthy" and "unhealthy" engagement is unsatisfactory in that it does not efficiently acknowledge the nuances of adolescents' use of music. She underlines, something that is also exemplified and pointed in Fuhr's study (2022), that it is *the use* of music that may strengthen negative emotions among adolescents, not the musical genre itself.

In a broader perspective, outside music and health and the scope of this text, we want to add that music is a strong means that can be used intentionally and unintentionally for unhealthy causes. Music used for commercial reasons, by manipulating us to buy goods, is something we are used to and have accepted. With the Internet and the accessibility to music through a continuous advancing technologically, the use of music continues to develop and expand, as we speak. With it, the development of its misuse will develop too. While services such as Spotify and YouTube provide us with new opportunities for music use and listening, it not only creates new possibilities for sharing and communication, but also provides us with involvement with artists and events that can engage us in destructive and/or isolating behaviours (i.e. McFerran, 2019; Fuhr 2022). We know that music used at the wrong time and place or for the wrong reasons, can cause mistrust, stress, overstimulation, and exclusion. Active music consumers, such as young people, can use music to escape from a society one feels alienated by (Skånland, 2012). Music on the internet is also used in war, to empower soldiers to fight and also to recruit young people to Jihad. In these cases, musicking *as* participation does not lead to a healthy outcome (Stensæth 2018). Therefore, there can be a thin line between healthy and unhealthy uses of music, and this may be truer for people who are very sensitive and vulnerable. So, again, the knowledge to practice and reflect wisely on how to use musicking for positive health outcomes, is becoming more important in the society of today.

REFLECTIONS ON THE LINK BETWEEN THEORY AND PRACTICE

So far, we have seen how music and health as a field point to many healthy and some unhealthy uses of music. However, sometimes the theoretical underpinnings are not always clearly linked to their practices. We see this in music therapy when theories of music therapy are sought to connect with experiences from practice. However, there is a tendency within the field to present explanations of the effects of music in a reductionistic way, often without concern for the larger context, let it be personal, situational, or cultural. One example could be how the effect of music upon specific areas of the brain has been used to "prove" or explain how and why music works in some therapeutic contexts. In such cases, the brain is presented as if it exists in isolation from a body, a personal history or cultural context.

We find it useful in this short reflection section to refer to Grimen (2008) and his philosophy to reflect upon the challenging line between practice and theory. Grimen points to how many (health) professionals regret how theory and practice are not too well integrated and discusses how such reductive practices are based upon a view upon knowledge where there is a high degree of homogeneity in the knowledge base. This means a situation where the elements in the professions' knowledge base comes from the same scientific discipline, for instance physics, or biology. When the basic knowledge in a discipline is constituted by different scientific disciplines, we must deal with a heterogeneous basis of knowledge. As we have seen, music therapy, which extensively informs music and health, needs to draw from fields of knowledge like medicine, biology, physiology, neuroscience, social sciences/epidemiology, as well as music studies, aesthetic theory, artistic research as well the social sciences. Some of these fields, like sociology or psychology, does not rest on a homogenous knowledge base, which makes the situation even more complicated if music therapists want to establish their understanding or explication based on these disciplines.

Grimen contends how one dimension concerns the degree of integration between the elements in the knowledge, if these are contained in a system or are fragmented without any logical connection. According to Ruud (2022), in music therapy, as well as in many of the social sciences we will meet with weak integration. Thus, music therapy will be challenged when it comes to integrate elements from different (and fragmented) fields of knowledge (Ruud 2022).

Another dimension, following Grimen, concerns the possibility to create some integration in the knowledge, to create a synthesis of theory and practice. We thus have to ask: What creates unity in the knowledge of the profession? We have seen throughout our presentation of music and health how some music therapists seek support in treatment theories from psychotherapy or developmental psychology, while others seek to develop a music centered approach, where contextual knowledge

from the situation where the music operates will be sufficient to make the legitimation. Others again, try to integrate the heterogeneous base of knowledge underlying health musicking initiatives in creating a broader approach or larger models, such is the case with “community music therapy” (Stige and Aarø 2012), or “humanistic music therapy” (Ruud 2010).

Often, therefore, the heterogenous knowledge base for health musicking will rest upon a practical synthesis rather than a definite homogenous and continuous theoretical grounding. In this case, and according to Grimen, theoretical knowledge can be seen as something resting on a practice, a way of doing health musicking. Theory, then, will be a way of articulating the practice.

CONCLUSION

We are witnessing how music and health knowledge is moving beyond its clinical starting point in the last century and increasingly becoming part of the general public health discourse. In this way, it is integrated and regarded as meaningful and useful in modern society's awareness of health musicking resources. Therefore, people are more and more educated in how to affirm and correct bodily, emotional, and relational experiences through musicking (c.f. centre of quadrant model), and through this affirmation appropriate music and musicking as an empowering health resource in their everyday life.

As demonstrated through this text, music therapy, as an academic discipline and a professional practice since its inception in the middle of last century has expanded its interdisciplinary basis, found new areas of practice, and gradually become relevant in the context of public health. Based upon a concept of "health musicking", individually based, as well as initiatives at meso and macro levels, and through research studies, musical engagement and professional experiences have proven effectful in preventing and promoting health, improved well-being and quality of life among a variety of target groups. During its course of development music therapy has established itself as a world-widely recognized, evidence-based treatment modality, with research centres and clinical programs in four continents. And in the same period, music therapists have widened the scope of their work and contributed to the development of "music and health" as an expanding field, reaching from individual work with one client or patient to public health programs using music activities and experience to promote health to people in the time span from cradle to grave.

As we have seen, the field of music and health demonstrates a variety of musical uses and functions. It involves active techniques and uses of performing, improvising, and creating music. We also find various ways listening to music, from everyday regulatory practice, music to assist with medical procedures, to deep listening procedures, as for example with the method *Guided Imagery and Music* (Grocke, ed. 2019) and its offspring *Music and Imagery* (Grocke and Moe eds. 2015). The functions of music, we have seen, involves relaxation, distraction from pain, triggering memories, identity building, supporting empowerment, creating opportunities for social bonding and bridging, assisting the process of recovery, creating hope, to mention a few.

Relating particularly to the field of music studies, these musical practices offer new ways of conceptualizing music, based upon new functions of music met with in the diverse areas of practice. The very concept of "health musicking" itself offer a new way to perceive music. Concepts like "communicative musicality" have proven useful in guiding improvisational practice. A more specific way to conceptualize music in the field of music and health may be "music as communication and

inter- or coaction", "music as a (producer of) metaphors", "music as a field of learning", "music as a producer of social capital", "music as self-object", and more. This calls for an increased interest from the part of music studies and musicology into the nature and functions of music as a provider of health and well-being.

The concept of "health musicking", as reflected in the descriptive quadrant model, is an expression of this development. We have used Wilber's quadrant model to map the field. At the same time, it is obvious that many of the health musicking practices described cross the boundaries between quadrants. The four "themes" in the model illustrate how integrative programs and activities may trascend the traditional dichotomies of mind/body and individual/social. We have added Bronfenbrenner's three-level model to give the concept depth and the model "a third dimension". This understanding of music and of health as a relational and performative element in human life is also a contribution to the development of music studies in the 21st century.

A major challenge to the field of music and health will be to handle the diversity of research approaches and sometimes conflicting theoretical discourses prevalent in the field. We must acknowledge how the field is multi-disciplinary, it encompasses both knowledge from the humanities, like music studies, philosophy, and social sciences, including first of all psychology, sociology, anthropology and cultural studies. Not least the natural sciences with subfields in medicine, neuroscience and biology play an important role in the prevailing hierarchy of evidence.

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Lars Ole Bonde is former professor of music therapy at Aalborg University, Denmark, and professor emeritus in Music and Health at (CREMAH).

Karette Stensæth is professor of music therapy at the Norwegian Academy of Music, where she is Director of Center for Research in Music and Health (CREMAH).

Even Ruud is professor emeritus of music therapy at the University of Oslo and Norwegian Academy of Music.