

Bodily expression and interaction in music therapy. A literature review on theoretical and practical approaches

Körperlicher Ausdruck und körperliche Interaktion in der Musiktherapie. Ein Literaturreview zu theoretischen und praktischen Ansätzen

Abstract

Introduction: Bodily expression is an essential part of nonverbal communication. In music therapy, nonverbal action and interaction usually go along with the activation of the body in musical play. Since mental and (neuro-)developmental disorders often severely impair interpersonal expression, a precise observation of bodily processes is considered to be important also for diagnostic and evaluative purposes. For this, however, there is a lack of theoretical and methodical concepts in music therapy.

Method: To obtain an overview of the current scientific and practical knowledge with regard to bodily expression in music therapy, a literature review was conducted, focusing on the treatment of mental and developmental disorders.

Results: The literature review produced 132 results, dating from 1974 to 2020, including methodical and theoretical approaches ($n=59$), assessments ($n=39$), scientific studies ($n=16$), interdisciplinary approaches ($n=11$), and overviews ($n=7$). The most frequently mentioned topics in this context were autism and children. Although the literature included some examples of detailed assessments, we could identify no concise theoretical or practical framework for characterising, interpreting, and handling bodily expression in music therapy.

Discussion: The results, particularly those from the assessment category, show potential for developing concepts for characterising and analysing music therapy from a multimodal point of view, considering it as an intertwining of vocal, musical, and bodily expression. Merging the existing music therapeutic and interdisciplinary knowledge (e.g. embodiment research) and evidence-based research on further populations will help music therapy to refine its methods and to promote development and establishment in the health care system.

Keywords: music therapy, literature review, body, expression, nonverbal interaction, nonverbal behaviour

Zusammenfassung

Einleitung: Körperlicher Ausdruck ist ein wesentlicher Bestandteil der nonverbalen Kommunikation. In der Musiktherapie gehen nonverbales Handeln und Interagieren meist mit der Aktivierung des Körpers im musikalischen Spiel einher. Da der zwischenmenschliche Ausdruck durch psychische und entwicklungsbedingte Störungen oft stark beeinträchtigt ist, wird eine genaue Beobachtung der körperlichen Vorgänge auch für diagnostische und evaluative Zwecke als wichtig erachtet. Dennoch mangelt es an theoretischen und methodischen Konzepten in der Musiktherapie dazu.

Methode: Um einen Überblick über den aktuellen wissenschaftlichen und praktischen Kenntnisstand zum Thema des körperlichen Ausdrucks in der Musiktherapie zu erhalten, wurde eine Literaturrecherche

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durchgeführt, mit Schwerpunkt auf die Behandlung psychischer und entwicklungsbedingter Störungen.

Ergebnisse: Die Literaturübersicht ergab 132 Ergebnisse aus den Jahren 1974 bis 2020, darunter methodische und theoretische Ansätze ($n=59$), Assessments ($n=39$), wissenschaftliche Studien ($n=16$), interdisziplinäre Ansätze ($n=11$) und Überblicksarbeiten ($n=7$). Die am häufigsten genannten Themen in diesem Kontext waren Autismus und Kinder. Trotz einiger körperbezogener Assessments konnten wir keinen konzisen theoretischen oder praktischen Rahmen für die Charakterisierung, Interpretation und Handhabung des körperlichen Ausdrucks in der Musiktherapie erkennen.

Diskussion: Die Ergebnisse, insbesondere jene aus dem Bereich der Assessments, verdeutlichen das Potenzial für die Entwicklung von Konzepten zur Charakterisierung und Analyse von Musiktherapie aus einer multimodalen Sichtweise i.S. der Verflechtung von stimmlichem, musikalischem und körperlichem Ausdruck. Die Zusammenführung des vorhandenen musiktherapeutischen und interdisziplinären Wissens (z.B. aus der Embodiment-Forschung) und der evidenzbasierten Forschung an weiteren Populationen soll die Musiktherapie bei der Differenzierung von Methoden und der Weiterentwicklung bzw. Etablierung im Gesundheitssystem unterstützen.

Schlüsselwörter: Musiktherapie, Literaturreview, Körper, Ausdruck, nonverbale Interaktion, nonverbales Verhalten

Introduction

Human interaction is dominated by nonverbal communication. This includes phenomena like body movement, posture, gesture, facial expression, tone of voice, and the sequence, rhythm, and pitch of the spoken words [1]. Our nonverbal expression and interaction shape, express, and reflect intra- and interpersonal events. In music therapy (MT), nonverbal expression and interaction is enhanced by musical-bodily expression. In this paper, *nonverbal interaction* is used as a term for all communicative aspects that go beyond verbal speech. *Musical-bodily expression* refers to any emotional and affective experience, including movements and bodily reactions while playing instruments (such as gestures, body posture, and expressive movements, facial expression, the way sticks are held, touching, or handling instruments, playing style) or listening to music.

In MT, nonverbal interaction and musical-bodily expression are induced and facilitated by the use of specific methods and techniques that require bodily activity. These include instrumental or vocal improvisation, singing, movement, dancing, (musical) role plays, etc. Thus, bodily behaviour, reaction and interaction are perceived, addressed, and activated in MT while playing instruments, clapping, singing, or listening to music. Listening is also considered to be an active process, as it evokes bodily reactions and interactions linked to emotional or cognitive processes [2].

Nonverbal behaviour and communication – two terms which are used synonymously by Damasio [3] – are often severely affected by developmental disorders (including neurodevelopmental disorders) [4] as well as by mental health issues. For example, interpersonal timing and co-

ordination processes, including synchronisation, resonance, and facial or vocal expression, are affected and therefore addressed in MT (communication, attunement capacities) [5]. Especially in people with developmental or mental disorders, bodily behaviour and responses to stimuli are frequently accelerated or slowed, distorted, delayed, limited, or blocked. Content, intentionality, and decision-making ability are often affected as well – sometimes no interaction is possible at all. Therefore, bodily behaviour and interaction are seen to be essential for a holistic view of humans and often serve as a) diagnostic features and b) key features demonstrating development and change in therapeutic treatments.

However, MT theory building shows a lack of an explicit and overall conceptualisation regarding the role of the body in MT. This shortcoming is reflected by the paucity of comprehensive music therapy literature (textbooks, basic literature) summarising bodily expression and its many different levels of meaning in MT. (It should be noted that this does not include Neurologic Music Therapy and other forms of functional MT, which follow a different path here, based primarily on the neuroscientific findings of the effect of music on the brain. However, it would be desirable to combine the knowledge from all forms.) A simple database search with the keywords “music therapy” and “body” led to the book *Der Körper in der Musiktherapie* (“The body in music therapy”) by Skrzypek, Schmidt and Timmermann [6]. Further, the AQR (*Assessment of the Quality of Relationship*) [4], [7], which is well-known in German-speaking countries, specifically refers to the role of bodily aspects, not least by defining the PEQR scale for assessing the physical-emotional quality of relationship by means of bodily observations. What was originally developed for children on the autism

spectrum has now been applied to other therapeutic areas such as psychosomatics [8], severely multiply handicapped people [9], [10], [11], adults with limited language skills [12], and schizophrenic patients [13].

A look through some representative examples of basic literature and textbooks on MT such as *The Oxford Handbook of Music Therapy* [14], *Musiktherapie bei psychischen und psychosomatischen Störungen* (“MT for mental and psychosomatic disorders” [15]), *Lehrbuch Musiktherapie* (“MT Handbook” [16]) and *Lexikon Musiktherapie* (“MT Lexicon” [17], [18]), shows that texts dealing with bodily expression mainly refer to:

1. diagnostics (analysing the patient’s behaviour, symptoms, etc.);
2. illustrating body-focused exercises, such as body perception or body scheme exercises, or activities linked to body movement, and
3. describing and evaluating the music therapeutic process, methods, and outcome (e.g. intra- and interpersonal development).

We speak of MT as a multimodal therapy because of the deep intertwining between musical and bodily expression through the use of instruments, voice, and further ways of bodily activation, but also because of the multimodal ways of communication, expression, and attunement. A new focus on the body in MT is also nurtured by embodiment research. Findings of empirical research indicate that bodily sensation and behaviour strongly influence one’s emotional reaction to certain situations or objects. In the last two decades, concepts of embodiment have become increasingly influential, with consequences for theories such as that of intersubjectivity and decision-making [19]. One of the main characteristics of embodiment theories is that they omit the dualism of body and mind, perception and conception, and perception and action [20].

“Embodied and enactive approaches to cognition often call for radical change in our ways of thinking about body, brain and mind [...]. On such views, the mind is not simply ‘in the head’ or reducible to brain processes; it is rather distributed across brain, body and environment” (p. 70) [21].

The study presented here was conducted with the aim of providing an overview of the current scientific and practical knowledge of bodily expression, such as the effects of intra- and interpersonal bodily aspects, embodiment, and affect regulation. It covers theoretical frameworks, methods and techniques, analysis tools, and scientific studies that relate to bodily expression and interaction in MT.

Theoretical approaches in developmental psychology, embodiment research, and neuropsychology

“The mind is embodied, and motion is key.” (p. 20) [22] Stern [22] proposes that movements accompany the ex-

pression of an emotion or sensation: Movements tell us something about the inner state of a person, for instance what they feel emotionally, what they think, if they are authentic, what they may do next, and whether they appear healthy or unwell. We experience each other through our vitality expressed in our almost constant movements (p. 3). Qualitative parameters like rhythm and dynamic features as well as tension and intensity curves shape these expressions of vitality. They help us express and share emotions and establish intersubjectivity in a non-verbal way. “Vitality affects have a regulating function, vary in form and inner process, are connected to body awareness, and are always present and continually available for interpersonal coordination via sharing and mutual regulation” (p. 102) [23].

Dynamic forms of vitality [22] is a younger, overarching term for the established term “vitality affects” (p. 7, footnote 1). Being capable of interpreting nonverbal behaviour is part of the implicit relational knowing that we acquire as toddlers [24], [25], [26]. Stern [22] avoided labelling vitality affects as emotions (using the terms “events” and “states” instead) but proposes that the dynamic forms of our vitality – how we move – are the source of emotional relating. As a consequence of his research, Stern turned his attention to nonverbal therapies like dance, body, movement and music therapy. Similar to body psychotherapy, where the main effect relies on the embodied and nonverbal interactions between client and therapist [27], MT is concentrated around this nonverbal intersubjectivity in play and its accompanied nonverbal bodily expression (for example affect attunement).

In the context of a more neuroscientific approach, Damasio [28] writes about the role of somatic markers, promoting the idea of an embodied mind. Somatic markers are considered to be feelings in the body associated with emotions. Marker signals coming from the body influence the response to stimuli on various levels: some occur consciously, some unconsciously. They relate to body states even when they arise in the brain’s representation of the body and not in the body itself (p. 1,413).

Embodiment research sheds new light on the role of body movements and the relationship between body and mind [19], [29]. It deals with the idea that the mind is embodied, or embedded in a body, and how bodily sensation and behaviour influence an individual’s emotional reaction to certain situations or objects [30]. This is also reflected in the embodied simulation theory of Gallese [31]. Ellingson [32] emphasises the value of creating and understanding meaning by specifically focusing on embodiment in terms of body language (see Schore and Schore [33]). De Jaegher [34] examines “how autistic particularities of moving, perceiving, and emoting relate to how people with autism make sense of their world” (p. 1) from the perspective of embodiment and sense-making. She emphasises that MT (next to dance and body movement interventions) addresses interactional coordination, rhythmic capacity, and participatory sense-making.

These capacities are also required for (nonverbal) affect attunement in a therapeutic relationship.

Multimodal interaction and references to the experience of movement in music and music therapy

Enactive theories in embodiment research are action-oriented and suggest that perception is informed by bodily movement, shaping most cognitive processes. On this basis, Fuchs and Koch [30] present their model of embodied affectivity, which suggests that emotions are a result of the “circular interaction between affective qualities or affordances in the environment and the subject’s bodily resonance, be it in the form of sensations, postures, expressive movements or movement tendencies” (p. 508) [30]. Motion and emotion are thus intrinsically connected in this model. Koch and Bergmann [35] also refer to the growing research on embodied music cognition that examines the role of the body as the base of musicality and rhythm.

In developmental psychology, affect attunement is considered to be the central mode of sharing subjective experiences: It is the interaction of sharing affects by a vocal or bodily gesture and attuning to someone with a corresponding vocal or bodily expression. Affect attunement is multimodal. This means that we use different modes of (non-)verbal expression to refer to the same event and same inner state. Dimitriadis and Smeijsters [36] hypothesise that the capacity to share vitality affects in music is the reason that music has such an impact on us. The multimodal transformation of vitality affects in arts and creative therapies is discussed by Stern [22] and others. The impact of this multimodal experience could be why intersubjective mirroring phenomena can be induced faster and more easily in therapies offering multimodal channels of communication and expression like bodily movement in dance therapy, crafting and drawing in arts therapy, and producing sounds in MT [37].

Stern [38] defines music “as sound in motion” (p. 89). Trevarthen and Malloch [39] consider vocal and bodily expression as a unity in human communication, suggesting that the medium of the music therapy relationship is an “interplay between vocalisations, sounds and bodily movement” (p. 13). In their theory of Communicative Musicality, the term musicality is used to capture the essence of movement, which they think is the primary level of experience and interaction [40]. Bodily expressions and body-related interventions certainly play a crucial role in every music therapy setting. Whenever a music therapist reacts musically to a patient, they do so also with bodily behaviour (e.g. facial expression, gestures, body movements, posture, playing style). All our techniques require bodily activity because this is part of making music and of our general nonverbal behaviour: We attune to the patient through sound and bodily expression. We carry out almost all our interventions through whole-body activities. Furthermore, we are used to ana-

lysing and interpreting a patient’s bodily expression with the aim of describing features, behaviours, disorders, and (counter-)transferences. Instrumental, vocal or verbal expression always includes bodily behaviour. Trevarthen and Malloch [39] point out that the rhythmicity and timing of our movements not only demonstrate physical functionality but also provide a mirror for one’s emotional state and emotional experience as well as for the developmental stage [41].

The theoretical explanations above aim to show how crucial the role of bodily expression in MT is. Especially when bodily expression includes specific characteristics of behaviour, such as stereotypical movements, agitation, reduced vitality and affectivity, body rigour, an altered ductus, or parathymia, a focus on MT as a multimodal therapy is required: It is not only two minds and pure sounds which shape the therapeutic relationship, it is two bodies acting and interacting on many different levels when making or listening to music.

Hypotheses and research questions

Given the relative lack of research and literature, one of our working hypotheses was that the musical and psychotherapeutic aspects are often at the centre of discussions to demonstrate music therapeutic effect. However, no particular awareness is paid to the inseparable nonverbal processes of bodily (inter-)action. Of course, it cannot be argued that the body plays no role in MT literature – but very often it seems that the bodily aspects are taken for granted rather than explicitly named in the theory building. This leads to an important question: Where do we music therapists draw our concepts from if we do not deal with the bodily processes in detail, which are inseparably linked to the musical events?

Another working hypothesis was that there might be many text passages about bodily expression in MT which are “hidden”, appearing neither in the title nor in the abstract – in other words, texts that no quick database search would find.

The study presented here is based on the literature review in the first author’s unpublished master’s thesis [42] and has been updated and extended for this paper. The research questions for the literature review were the following:

1. Which information does a database search on MT provide when using a set of body-related keywords?
2. What is the state of the scientific and practical knowledge of bodily expression (in the sense of nonverbal behaviour or nonverbal interaction) in MT with patients with mental and (neuro-)developmental disorders?
3. What gaps exist in the literature, particularly regarding the conclusiveness of MT theory, research, and practice with regard to bodily aspects?

Method: integrative literature review

Research design and search strategy

Although we were initially guided by the recommendations of the PRISMA Statement [43] for a systematic review and other review examples [44], [45], the integrative review [46] seemed most appropriate for our chosen methodology. However, the focus was not the evaluation of the scientific quality of the texts, but to collect, screen, and structure the existing knowledge going back to the 1970s, also including theoretical and practical aspects. Consequently, some adaptations were required: for example, text types were not limited to RCTs and sources of texts were expanded to include any scientific journal or text book.

To optimise our study design, we tried various keywords in the database search. We found that applying exclusively body-related search terms like *body* and *movement* did not yield a representative hit result. The range of search terms was expanded to include words that may indicate a relation to bodily expression or describe techniques in MT related to bodily interaction such as *non-verbal*, *multimodal*, *express(ion)*, *interaction*, and *affect attunement*. The search terms applied using multi-field searches are listed in Tab. 4 of the Attachment 1. This was done, however, with the intention of subsequently filtering the resulting hits according to their actual relevance for the intended overview. To this end, inclusion and exclusion criteria were defined, shown in Table 1, focusing on the intra- and interpersonal aspects of the body in MT with people suffering from mental and developmental disorders.

To find relevant publications, the following databases were searched in the period from January to June 2019, with a complementary top-up search being conducted from February to April 2021 for this paper: Ovid Medline® 1946 to 2020, Ovid Medline® In-Process & Other Non-Indexed Citations, PsycARTICLES Full Text, PSYNDEXplus Literature and Audiovisual Media 1977 to 2020, PsycINFO, Scopus, and Pubmed.

Furthermore, the databases of the following institutions were searched: University of Vienna, University of Music and Performing Arts Vienna, and University of Oxford, UK. In addition, a hand search was conducted in July 2019 and February to April 2021. It included the following journals: *Musiktherapeutische Umschau* 1980 to 2020; *Musik-, Tanz- und Kunsttherapie. Zeitschrift für künstlerische Therapien im Bildungs-, Sozial- und Gesundheitswesen* 1988 to 2020; *British Journal of Music Therapy* 2000 to 2020; *Music and Medicine* 2009 to 2020; *The Arts in Psychotherapy* 1980 to 2020; *GMS Journal of Arts Therapies* 2019 to 2020.

Search procedure

For her master's thesis, Farthofer-Schmid [42] searched the online databases. Of these, 250 titles could be eliminated. Initially, *motor** and *phys** were also included as search terms. However, it was soon obvious that the results were either not relevant to the topic or were covered by other search terms. Interestingly, applying the search terms in the category "subject" did not mean that the databases consulted via the Viennese universities also yielded results containing the search term in the title. For this reason, the keywords were also entered for the title, for example *musi* therap* (title) AND bod* (subject) OR bod* (title)*, as shown in Tab. 4 of the Attachment 1. The manual search included a hand search, reference mining and the use of the cited-by-function.

In some cases, no classic abstract was available (e.g. older texts, books, or book chapters). In this case, the whole text was screened. It should also be noted that within this review it did not make sense to sort out titles first and then abstracts, as we were often looking for implicit references to the topic hidden in the texts.

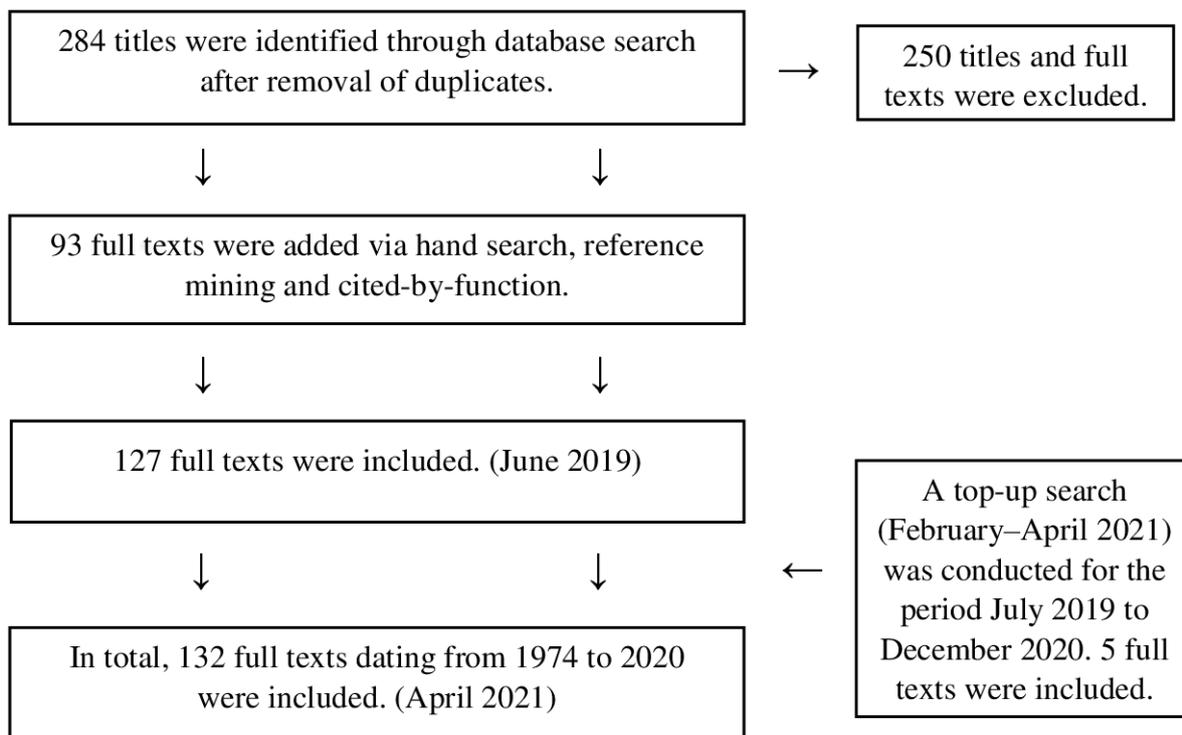
After the selected titles from the online databases and the results from the manual search had been read carefully, all the references they contained were scanned. Reference mining was stopped at that level. Furthermore, the cited-by-function offered online by the publishing houses was applied. For the older (mostly non-digitised) texts, the cited-by-function provided by Google Scholar was applied, as it was often the only way to find citations of these publications in recent texts. In 2021, a top-up search was conducted for this paper with the same approach to identify relevant publications dating from July 2019 to December 2020. A full flow-diagram is shown in the next chapter (Figure 1).

Analysis strategy

The plan for analysing the results followed both inductive and deductive strategies: Due to the broad range of text types, contexts, and contents, we defined six sections of text types, distinguishing between studies, assessments/microanalyses, overviews, and methodical and theoretical as well as interdisciplinary approaches (main categories). In a next step, sub-categories according to various MT backgrounds were defined to comprise the methodical and theoretical approaches. Included populations, diagnoses, and particular topics were intended to be specified within the defined categories and sub-categories. This system provided a matrix that could be applied to all included sources.

Table 1: Inclusion and exclusion criteria for the literature review

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> • Publication in a scientific journal, in a textbook or, if available via database, in an academic thesis until December 2020 • Full text in English or German • Practical and theoretical approaches as well as scientific studies dealing with bodily expression in the sense of nonverbal behaviour/nonverbal interaction (including playing styles and movement) in MT • Symptoms/diagnoses: (neuro-)developmental disorders, mental disorders 	<ul style="list-style-type: none"> • Abstracts in conference proceedings • Treatments using music without music therapeutic intention • Predetermined sequences of tasks (e.g., music and movement exercises) • Physiological MT (functional MT, Neurologic MT) • MT in neurorehabilitation • Behavioural MT • MT in neonatal care (NICU) • Symptoms/diagnoses: psychiatric disorders due to neurodegenerative diseases (e.g., dementias, Parkinson's disease), organic diseases (e.g., cancer), bodily ailments with unclear causes (e.g., fibromyalgia, chronic pain syndromes, migraine, tinnitus) and palliative care.

**Figure 1: Flow-diagram of the literature review**

Results

Overview

The search yielded 132 publications dating from 1974 to 2020 (for full publication list, see Attachment 1, Tab. 5). They comprise theoretical and methodical texts, including assessments, expert's opinions, case studies or case vignettes, lexicon entries, textbooks, doctoral and master's theses, as well as quantitative and qualitative studies, and study reports. Figure 1 shows the flow-diagram of the literature review.

Table 2 shows the sources in which the texts were published with regard to their scientific contexts. Texts in English and German are almost equally represented: English with 66 results, German with 64 results. Two

sources were available in a bilingual publication. In total, 44 texts originated from music therapy journals, 7 from interdisciplinary journals, 23 from other journals, 56 from books (including 4 theses/dissertations) and 2 from a DVD and booklet text. All journals except one are peer-reviewed.

Table 3 is a summary of the results including text type, theoretical backgrounds and dominant topics and populations. Comparing the various approaches of Section 4 ($n=59$) with each other shows that authors related to psychodynamic MT produced most of the publications ($n=25$). Texts referring to music therapeutic assessments and microanalyses (Section 3) were also well represented ($n=39$), followed by scientific studies ($n=16$; Section 1 and 2).

Table 2: Sources and scientific quality of texts covered in this review (n=132)

Sources	Number of results (English/German)
Music therapy journals	44 (23/21)
Musiktherapeutische Umschau	0/21
Nordic Journal of Music Therapy (incl. Nordisk Tidsskrift for Musikterapi)	9/0
Journal of Music Therapy	6/0
British Journal of Music Therapy	4/0
Music Therapy Perspectives	2/0
New Zealand Journal of Music Therapy	1/0
Voices: A World Forum for Music Therapy	1/0
Interdisciplinary creative therapy journals	7 (4/3)
Musik-, Tanz- und Kunsttherapie	0/3
The Arts in Psychotherapy	3/0
Approaches: Music Therapy & Special Music Education	1/0
Other scientific journals	23 (20/3)
Journal of Autism and Developmental Disorders	3/0
Psychodynamische Psychotherapie	0/2
Autism	1/0
Clinical Child Psychology and Psychiatry	1/0
Clinical Psychology & Psychotherapy	1/0
Cochrane Database of Systematic Reviews	1/0
Frontiers in Integrative Neuroscience	1/0
Health Psychology Report	1/0
International Journal of Music Education	1/0
International Journal of Qualitative Studies on Health and Well-being	1/0
Journal of alternative and complementary medicine	1/0
Journal of Child and Family Studies	1/0
Journal of Child Psychology and Psychiatry	1/0
Journal of Creativity in Mental Health	1/0
Music and Medicine	1/0
Philosophical Transactions of the Royal Society of London	1/0
Psychological Reports	1/0
Psychotherapie – Psychosomatik – Medizinische Psychologie	0/1
Research in Autism Spectrum Disorder	1/0
South African Journal of Psychology	1/0
Book/book chapter/dissertation/thesis	56 (19/37)
Books	21 (4/17)
Book chapters	31 (15/16)
PhD dissertations	2 (0/2)
Master's theses	2 (0/2)
Other sources: DVD incl. booklet	2 (bilinguals)

Table 3: Summary of results

Text Type	Appendix Section No.	Theoretical Background	Language		Dominant Topics / Populations (n≥3)*	Publication sources	
			English	German			
Peer-reviewed scientific studies (including 9 RCTs) (16)	1 & 2		16	0	<ul style="list-style-type: none"> • Children (10) • Autism (8) • Effects of MT (8) • Adolescents (3) 	<ul style="list-style-type: none"> • MT journals (8) • Other scientific journals (7) • Interdisciplinary journals (1) 	
			25	14			<ul style="list-style-type: none"> • Children (11) • Autism (4) • Analysis of music, body and movement (4) • Communication disorders (3) • (Neuro-)Developmental disorders (3) • Quality of relationship (3)
Assessments & microanalyses (39)	3		6	0	<ul style="list-style-type: none"> • Body-oriented interventions, body awareness (12) • Children (11) • Autism (7) • Adults (3) • Contact and interaction patterns (3) • Improvisation (3) 	<ul style="list-style-type: none"> • Book chapters (20) • Books (14) • MT journals (17) • Other scientific journals (5) • PhD theses (1) • Master's theses (1) • Other sources: DVD (1) 	
			2	10			<ul style="list-style-type: none"> • Children (11) • Autism (7) • Adults (3) • Contact and interaction patterns (3) • Improvisation (3)
			2	10			
			9	16			
			0	5			
Total: 19**			Total: 41**				
Overviews (7)	5		3	4	<ul style="list-style-type: none"> • Body-oriented interventions, body awareness (4) • Autism (3) 	<ul style="list-style-type: none"> • Other scientific journals (2) • Books (2) • MT journals (1) • Book chapters (1) • Master's theses (1) 	
			5**	7**			<ul style="list-style-type: none"> • Combined dance-, movement- and music therapy (5) • Interdisciplinary view on music and movement (3)

*Mentioned at least in 3 titles; ** Including a bilingual source: DVD

Database search versus manual search

As shown in Figure 2, the keyword search (=database search) delivered 37 results in total. Reference mining was particularly fruitful with 70 results, 26 of which come almost exclusively from one source [6]. The cited-by-function delivered six results. The hand search in selected journals generated 19 results.

Timeline: publication peaks

The period of 1974 to 1999 had a consistently low turnout (0–3 publications per year, except 1999 with five publications; total for this period: $n=29$). From 2000 to 2020, there are a total of 103 publications. So the largest amount by far was published in the last twenty years. The significance of this should not be overstated, as the productivity of MT research has generally increased over the last decades, but it may indeed show a growing interest in the subject.

Most frequently mentioned diagnoses and age groups

As shown in Table 3 (“Dominant Topics/Populations [$n \geq 3$]”), the diagnosis most often referred to throughout all text types is autism (ASD; $n=24$ [also including hits $n < 3$]). The most investigated age group is children ($n=33$ [also including hits $n < 3$]), with 12 titles specifically referring to children with autism. Table 3 shows further topics and populations which were named at least three times in the titles. The study sections (see Table 3 and Attachment 1, Tab. 5) include nine RCTs and are characterised by studies on autism, children, and the effects of MT. The section “Assessments & microanalyses” expands the range of topics to include analyses on music, body, and movement as well as the quality of the therapeutic relationship. The largest section, called “Methodical and theoretical approaches”, shows the highest rate of texts referring to body-related techniques and body awareness. The “Overview” section includes seven results and is dominated by texts on body-oriented techniques and autism. The “Interdisciplinary approaches” section lists some reports on combined dance, movement, and MT.

Practical and theoretical approaches

Here, some of the central ideas of the publications included in the review are summarised: Expressing oneself instrumentally or vocally always requires bodily activity [4]. The analysis and work with movement is particularly relevant for patients (including adults) who express themselves incoherently or through impulsive actions or enactments and who cannot differentiate inner states [47]. Disorders of communication and socio-emotional development, and intrapsychic conflicts, may manifest themselves in impaired rhythms. Comprehensive understanding of the transition from movement to music in the

gesture of playing – and vice versa – is required [35]. Early emotional experiences and traumatic experiences are encoded into body states [48]. Music is seen to embody feelings and intentions [49]. MT is a way to let the body express itself without the need to understand or know anything [50]. The impact of music is based on the impact of vitality affects [36]. Vitality affects (=vitality forms) are vital, rhythmic-dynamic features, tension curves and intensity contours of movement, existent in all kinds of motor, sensory and affective activities [47]. The nonverbal sharing of inner states is not only important in parent-infant interactions, but also in therapist-client relationships (children and adults alike). The attunement is intensified by attuning one’s voice and body posture [23]. Human attachment is characterised by “bio-behavioural synchrony”, which means a “pairing of coordinated nonverbal behaviour with physiological responses” [51]. “(M)oments of attunement and bodily synchronization both naturally occur and are created purposefully in music therapy” [5].

Answers to the research questions

Referring to the research questions presented at the start, the following can be stated: The database searches in 2019 and 2021 resulted in 37 titles. The largest number of results was revealed through reference mining ($n=70$). Twenty-five titles were added by further search methods (hand search and cited-by-function). Digital databases therefore account for a relatively small number of the results. This might not only be because some of the texts were written before digital databases replaced card catalogues in libraries, but also that even many recent texts are either not linked to body-related keywords or still not recorded in databases.

The second and third research questions referred to the state of the scientific and practical knowledge and the gaps in knowledge. The literature review showed that scientific studies on bodily expression in MT are limited to very few publications. The most recent studies – Mössler et al. [5] and Dvir et al. [51] – address the significance of bodily interaction in MT in the realm of attunement techniques for autism. Furthermore, there is no comprehensive concept of the relevance, the interpretation, and handling of bodily expression in MT. However, there are serious approaches, particularly in the field of assessment. The results of the review show a focus on children and autism. The assessment section of the review (see Attachment 1) includes assessments in which the analysis of bodily expression is a key feature: AQR – *Assessment of the Quality of Relationship* [7], *BMMS – Body Movement Music Score* [13], [52], and *MUSAD – Music-based Autism Diagnostics* [53].

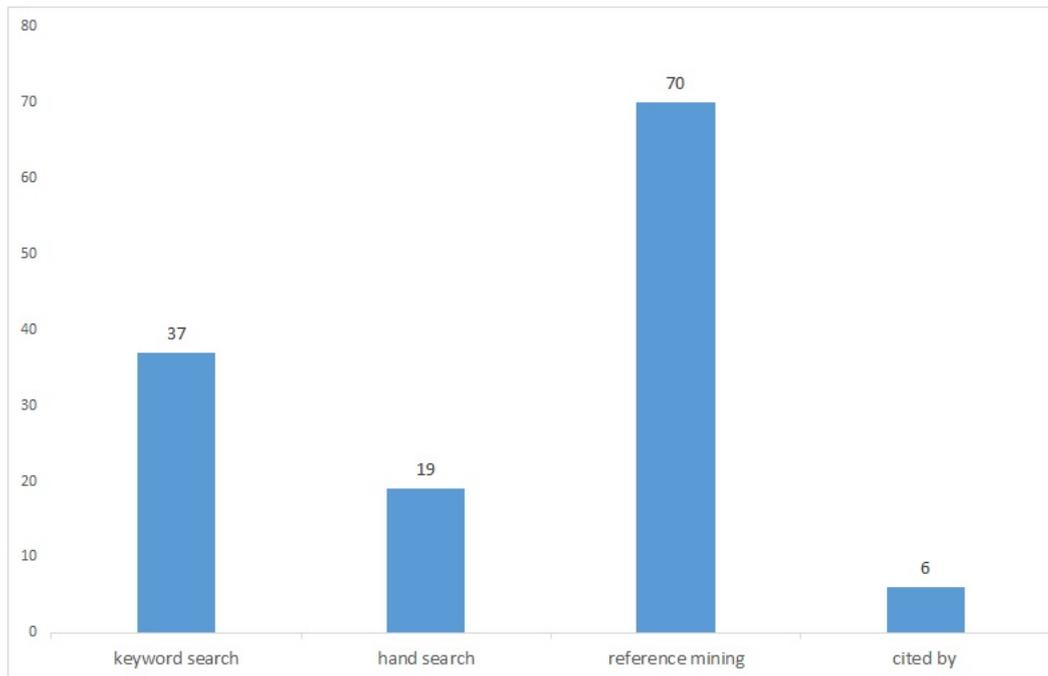


Figure 2: Origin of the results (after removal of duplicates)

Discussion

Is the body in MT research visible? Hypotheses based on keyword settings

As outlined above, many authors included in this review do not mention any bodily aspects in their abstract, keywords or title – even if they describe bodily expression in detail (e.g., [54], cf. Attachment 1). Some do not explicitly refer to the body, although their text provides, for example, an analysis of nonverbal behaviour or other specific references to bodily expressions (e.g., [55], cf. Attachment 1) Some authors eschew thoughts on the body altogether, although the topic might require it (those are obviously not part of the result list). Regarding the reasons for this we can only ask: Are bodily behaviour and interaction neglected unconsciously, as if they were hidden in plain view – similar to what Stern [38] describes for dynamic forms of vitality? Or is bodily expression not considered to be an object of study in MT? Or is it a scientific top-down-dogma, which is still widespread (discussed by [29]), that prevents music therapists from perceiving it as an issue? Furthermore, communication research focused for many years only on facial expression when investigating interpersonal relating. Focusing on bodily expression in communication research is a fairly recent development [56]. Some of the hypotheses above are underlined by Nygaard Pedersen [57], who advocates more extensive training in body-related self-experience for MT students.

An interesting observation during the review process was that a relevant number of sources could only be identified by adopting the extended keyword search, as mentioned above. A representative example of the lack of body-related keywords is a publication by Reimer [9], who is an

expert on preverbal interventions in MT. Her paper deals with techniques of affect regulation in severely multiply handicapped adults. The author describes body and face expression indicating dysregulated affects and she adapts the AQR (a music therapy assessment mentioned above) for handicapped adults within a clinical trial. This publication is representative of the texts in which no body-related keywords were used in the meta-data, but the term “affect regulation” [9] was. The latter is to be understood as a profoundly body-related process [26]. In a thematically related paper [11], which was found by hand search, the keywords include “Developmental psychology”, “AQR-Tool” and “Videoanalysis” (p. 384). Similarly, the study by Mössler et al. [58] could initially only be retrieved via the key word “affect attunement”. In a follow-up study by Mössler et al. [5] the authors used “body” as a keyword, which made it considerably easier to find the study.

Tentative conclusions

Our results indicate that future developments in MT research should pay more attention to bodily expression. This might also include recontextualising or implementing inclusive, interdisciplinary body- or embodiment-based theories and concepts into MT research and practice. As Mössler et al. [5] stated, “applying embodied practice in research will contribute to a theoretical and methodological extension and expansion of research on attunement that acknowledges it as an intercorporeal phenomenon and activity” (p. 3,931).

Based on the observation within the review, the following hypotheses can be derived: Descriptions of bodily behaviour and interaction are frequently used for diagnostic purposes and to describe the therapeutic process (evaluation of MT outcome and methods). Authors tend to fo-

cus on the impact of musical qualities at the expense of the fact that the creation and inner processing of music always includes bodily processes. Often-used buzzwords related to bodily expression such as “nonverbal methods”, “establishing a therapeutic relationship” or “synchronisation” have not yet been systematically and scientifically investigated from a multimodal perspective regarding the musical and bodily qualities on a non-hierarchical level. In every mental or developmental disorder, the body, including nonverbal communication, and the interactional nonverbal events are the scene of symptoms. This is, for instance, self-harm, impaired mentalisation capacity, and impaired ability to build and maintain relationships. However, bodily aspects also shape music therapeutic interventions and techniques. These levels of meaning of the body are apparent in the music therapeutic treatment of many forms of disorders and symptoms, such as BPD, eating disorders, traumas related to bodily-emotional boundary violations, dissociative symptoms, post-traumatic stress disorders, pain disorders (psychosomatics), ADHD, ASD, and developmental disorders. In each case, the course of multimodal processes that are activated and addressed in MT is highly specific. Bodily aspects also exist in many ways that are often not explicitly addressed in the verbal description or scientific discussion of the process: for example, the bodily aspects of transference and countertransference, as reflected particularly in psychodynamic MT approaches, or the role of body-regulatory processes in (musical, i.e. rhythmic) stabilisation exercises for people with acute traumatic disorders. There is, however, a lack of theory, research, and general awareness in MT for this subject that still seems to be hidden in plain view. Further discussion of this is needed with regard to a shift from a solely music-based focus to a more differentiated, multimodal approach in terms of intertwined musical and bodily processes defining the therapeutic process.

Limitations

For this review, the breadth of the topic was a challenge. It would have been easier to narrow the topic down to a specific age group or to a specific disorder/symptom or text type. However, it was the aim with this review to compile the existing scientific and practical knowledge of bodily expression in MT and limit bias as far as possible by applying a systematic search procedure.

In some cases, critical discussion of inclusion/exclusion criteria was possible. One of the exclusion criteria was bodily ailments with unclear causes/chronic pain syndrome. However, Bock's text [50] about body-related interventions (see Attachment 1) was included because she describes somatoform pain disorder with a transferable approach to explore nonverbal behavioural patterns. The result list includes several authors who are mainly available in German. The lack of English translations is also common in other countries, such as Northern European countries, for example: In the course of the research, a few potentially relevant Northern European

publications were identified which could not be included due to the language barrier.

There was no specific search for academic theses (PhD dissertations or master's theses). However, they were included if they appeared as a result of the database search or within reference mining.

The varying amount of literature regarding assessments (e.g. Bergmann et al.: four publications related to MUSAD, Bruscia: one publication related to IAP – Improvisation Assessment Profiles) does not reflect the total amount of existing publications related to that topic. The search terms did not comprise “assessment”. Bruscia [59] and others [e.g., [60], [61]] did not appear in the databases, but were found via reference mining [52]. As these articles were themselves a result of reference mining, their references were not integrated in the results.

No further evaluation of the scientific quality or level of evidence of the studies included was undertaken. A more detailed examination of reliability (e.g. AMSTAR) would be desirable.

Another worthwhile project would be to look through textbooks and handbooks systematically in search of methodical and theoretical approaches. It is likely that some relevant information is hidden in other publications. One example is Lutz Hochreutener [62], [63] who did not appear at all in the result list. This author discusses several body-related aspects such as the relevance of body perception and observing body language, as well as relaxation and movement in MT, particularly with children.

Finally, this review does not cover texts about body work such as functional relaxation, concentrative movement therapy, breathing exercises or meditation used by music therapists.

Conclusion and outlook

From the perspective that MT is a combination of vocal, musical, and bodily expression with physiological responses, it must be defined as a multimodal therapy. It is not the musical element only which has to be investigated; rather, it is the intertwining of vocal, musical, and bodily expression. The choice of music therapy methods and the therapy process is strongly influenced by the patient's ability or state of nonverbal expression (including vocal, musical, and bodily expression). This has to be considered as a research subject in its own right, independent of the research on effects induced by music and its methodically varied parameters.

Theory on the significance of the body in MT

The subject of bodily expression in MT still has to be considered an unprocessed, large, and sometimes overwhelming one. A first step would be to define the different levels of meanings of bodily expression in MT. As mentioned in the beginning, the topic includes nonverbal communication in general as well as bodily behaviour

and interaction induced by active and receptive MT methods, and by the application of specific music therapeutic techniques (such as mirroring, synchronising, exaggerating etc.; cf. [64]).

Substantive theory building on the meaning of the body in MT should take into account the respective differences between developmental stages across the lifespans and also provide distinctive contextualisation of disorders, symptoms, and of course individual resilience factors and resources. In particular, attention should be paid to bodily aspects of therapeutic relationship, relational qualities and dynamics, including transference and countertransference processes, as well as its regulating functions in trauma-adapted music therapy. The specific examination of psychophysiological and neurophysiological processes through body-oriented contact and relationship processes in MT might also enhance the understanding of MT as a multimodal area of vocal, musical, and bodily expression. There is currently an exciting development regarding attunement research in MT, in which attunement is considered to be closely linked to body synchronisation [5], [51], [58]. The results may encourage music therapists to define (improvisational) MT as “a multisensory and dynamic interweaving of diverse modes of expression, movement, and interaction” [5].

Gaps in knowledge

To address the gaps in knowledge, the following can be done:

- Establishing a conclusive music therapeutic theory on the relevance of the body in MT;
- Creating a multidisciplinary overview by collecting and merging the knowledge of practical music therapeutic approaches (including neurologic and functional MT) as well as evidence from neurobiology, developmental psychology, cognitive science and more;
- Examining and expanding terminology for analysis of bodily expression;
- Elaborating concepts for the multimodal processes in MT including vocal, musical, and bodily expression on an equal level;
- Conducting empirical studies to verify theses, hypotheses, and working models, as well as promoting mixed methods research to develop and verify music therapy applications;
- Extending research to further age groups and various mental disorders.

Consequences for MT training, practice, and supervision

We see important indicators for directing greater attention towards specific body-related issues not only for further research or theory building but also for MT training, practice, and supervision. Some of the relevant aspects are:

- The therapist’s own nonverbal behaviour and awareness (e.g. body language in general – bodily behaviour and interaction, bodily self-awareness, self-experience in bodily expression, somatic countertransference);
- Skills in analysis, including video analysis, of bodily expression (useful for diagnostics and evaluation of the therapeutic process);
- Awareness and reflective capacities regarding the significance and implications of physical closeness and distance (including touch);
- Preverbal methods adapted to the patient’s developmental stage;
- The effect of mirroring phenomena induced by multimodal levels of communication;
- Basic knowledge of sensory/sensorimotor integration;
- Bodily activation through listening to and making music;
- Movement and dance, psychodynamic movement, dance movement therapy and further body-oriented psychotherapies
- Specific MT techniques to enhance bodily relaxation and mindfulness;
- MT methods related to embodied experiences of trauma and violence.

Many of the above-mentioned aspects of a deliberate engagement with the body are already firmly established in the curricula of many music therapy training programmes. Still, the body of existing literature does not yet adequately reflect the consideration of the body in MT conceptualisation and theorising. We regard these issues as essential in the reflections of practitioners in everyday therapeutic practice as well as for practice-oriented research. This includes in particular the increased awareness of bodily phenomena in relation to movement (both the therapist’s own and that of the patients) and the acknowledgement of the potentials of music therapy’s multimodality, seen in the multi-layered intertwining between instrumental, vocal, and other body-related activities pursuing the goal of communication, expression, and interpersonal attunement. Raising awareness in this way could also counteract the “unconscious neglect” mentioned above. For research-based music therapists, it might be worthwhile to make their own embodiment experience a research topic (cf. [32], [65]).

Conclusion for MT theory, assessment, and practical approaches

In conclusion, the current theoretical understanding of the MT field as regards bodily expression drawn from this review might be summarised as follows: Musical expression cannot be separated from bodily expression. The musical effect cannot be separated from the bodily effect. The relevance of bodily expression and interaction in MT seems to be most frequently investigated in the realm of autism and in the age group of children. Attunement and body synchronisation occur naturally and are created purposefully in MT [5]. The integration of body and

movement activates dimensions of sensation and experience and expands diagnostic possibilities that are not entirely or only partially available on a purely musical level [13]. Treating people with limited abilities to communicate and to express themselves requires body-related strategies.

The starting point of our study was to consider how bodily expression is already integrated in MT practice and research. This literature review is intended to provide an overview of the existing considerations and approaches, scientific and practical knowledge as well as the gaps in knowledge. The diversity of topics and approaches confirms how many levels of bodily expression in MT play a role in the treatment of mental and developmental disorders – be it in methods and techniques, assessments, evaluation, and underlying communication theory and developmental psychology. The attention to detail shown particularly in MT assessments, where bodily expression is explicitly named and included, could be a foundation to develop a theoretical and practical framework for characterising, interpreting, and handling bodily expression in MT.

Notes

Competing interests

The authors declare that they have no competing interests.

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Attachments

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1. Attachment 1_jat000027.pdf (208 KB)
Appendix

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