A Conceptual Methodology to Define the Therapeutic Function of Music

DEANNA HANSON-ABROMEIT, PhD, MT-BC   University of Kansas

ABSTRACT: Music is a complex intervention strategy; thus, the characteristics of the music are important to therapeutic outcomes. Greater clarity for the role of the musical elements in therapeutic outcomes is desired, yet few strategic methods support the description of the musical elements in the development of treatment interventions. This paper proposes an ante-hoc worksheet to articulate the *Therapeutic Function of Music (TFM) Plan*. This worksheet helps the music therapist organize the relationship between the treatment goal, theoretical framework, and musical elements in order to define the purpose and intent of each musical element. The result is a theory-based synthesis of the music as a whole for therapeutic intervention. The *TFM Plan* will benefit music therapy with stronger explanations of the therapeutic effect of music, generate consistent application of music characteristics for therapeutic response, support predictable outcomes, and foster a specialized understanding of music as a therapeutic medium differentiated from other professionals using music-based interventions.

Music has a strong ability to effect change. History has many examples of how music changes behaviors or has been used in healing practices (see Davis & Gfeller, 2008; Wigram, Pedersen, & Bonde, 2004a). Such changes have influenced how music is valued and integrated into society. Basic science, clinical practice, and research have demonstrated that the characteristics of music (tempo, melodic contour, timbre, rhythm, tone, attack, etc.) are important to listener comprehension and therapeutic outcomes of music-based experiences (Bonde, 2005; Copeland, 2002[1939]). There is a desire in music therapy to more clearly understand the role of the musical elements in therapeutic outcomes (Bonde, 2005; Hanson-Abromeit, Shoemark, & Loewy, 2008), yet there are few strategic methods for articulating and organizing the role of these elements prior to the treatment interventions. Therefore, the purpose of this paper is to introduce the *Therapeutic Function of Music Plan*, a conceptual methodology worksheet to define the therapeutic function of music as part of intervention development (see Appendix A).

Music is a complex stimulus due to the various characteristics of musical elements and how they merge to become a whole unit. Humans, as multisensory beings that respond to experiences differently, are complex organisms. Therefore, music-based strategies can be considered complex behavioral interventions. In other words, music is a complex stimulus used for therapeutic change with an individual or group for which a specific response cannot be easily guaranteed. Careful consideration of the components of music in relation to client characteristics is critical for efficacious music-based intervention. Outcomes in therapy are often analyzed after an intervention. Perhaps articulation of an intervention, from a theoretical perspective, before implementation (i.e., an "ante-hoc" process), could increase understanding of the role of music as a mechanism for change (Michie, Fixsen, Grimshaw, & Eccles, 2009).

In music therapy, there is an implicit understanding that music, utilized in relation to goals and objectives, has inherent therapeutic value. A common understanding is that music changes responses and that the characteristics of the music are important to the therapeutic outcome. There are many historical references to the function of music. Merriam (1964) explained function as the objectively defined, nonrandom and active use of elements in which the effectiveness of the broader purpose comes from the complex, changing, and reciprocal interdependence of each element. Thus, function gives a reason for use. Merriam offered an anthropological perspective characterizing 10 distinct functions of music (emotional expression, aesthetic enjoyment, entertainment, communication, symbolic representation, physical response, enforcing conformity to social norms, validation of social institutions and religious rituals, contribution to the continuity and stability of culture, and contribution to the integration of society). These functions are commonly referred to in a therapeutic context (Gfeller, 2008).

Gaston (1968) described the general function of music as a way to enrich life, thus making enrichment of life through music a major function of music therapy. He wrote that "it is the wordless meaning of music that provides its potency and value" (p. 23). Alvin (Alvin & Warwick, 1991) addressed the complexity of music as a therapeutic application. She recognized music therapy as a comprehensive application of the characteristics of the music, the processes of change, and the relationship between the therapist and client (Alvin & Warwick, 1991; Alvin, as cited in Bruscia, 1998).

Bruscia (1998) describes music therapy as a process of relational discovery between the "person, a specific musical process (i.e., composing, improvising, performing, or listening), a musical product (i.e., a composition, improvisation, performance, or perception), and a context (e.g., the physical, emotional, interpersonal environment)," and says that "in music therapy, these components are integrally related if not inseparable," additionally stressing that "the very point of music therapy is finding the relationships between them" (p. 101). More specifically, Hanser (1999) stated that:

the very basic organizing and energizing capacity of rhythm is the most significant factor in the therapeutic function of music. It is up to the music therapist to manipulate melodic, rhythmic, and harmonic elements, taking into account individual needs and observed effects of different music. (p. 139)

A longtime common technique of music therapy is the iso-principle (see also Heiderscheit, 2015), by which music is matched with the current state of the client and then progressively changed to bring about a desired change in mood or physiological response (Davis & Gfeller, 2008; Davis, Gfeller, & Thaut, 2008). However, these references to the therapeutic function of music offer little clarity to the effective purpose of music in relation to the treatment goal and how this function is determined, designed, or analyzed. Distinguishing characteristics of the music stimulus specific to a therapeutic context will contribute to a general theory of music therapy, thus making the use of music as a therapeutic agent less abstract (Abrams, 2011).

Some research has been conducted to better understand the relationship between characteristics of a music stimulus and human response in clinical populations. A core segment of research in music therapy has examined the meaning of the musical experience in the context of the therapeutic relationship, including the development of various methods for analysis of the music (Bonde, 2005). Some examples in the field of music therapy include Neurologic Music Therapy (Clair, Pasiali, & LaGasse, 2008; Thaut, Thaut, & LaGasse, 2008) and music-centered music therapy models (Aigen, 2005) such as Creative Music Therapy (Wigram, Pedersen, & Bonde, 2004b), Analytic Music Therapy (Priestley, 1994, 2012) and the Improvisation Assessment Profiles (IAPs) (Bruscia, 1987; Bonde, 2005).

Neurologic Music Therapy (NMT) is a standardized and research-based use of music to improve function as the result of neurological disease or trauma. It is grounded in scientific research of brain processes used during music perception and production. Standardized clinical techniques pair a desired functional outcome (e.g., walking) with a musical translation of that function (e.g., walking to a rhythm). A guiding framework to NMT is the Rational Scientific Mediating Model (R-SMM). R-SMM connects musical and nonmusical theories with which to understand music as a facilitator for change in functional behavior, and to develop evidence-based music therapy intervention strategies (Clair, Pasiali, and LaGasse, 2008; Thaut, 2000, 2005; Thaut, Thaut, and LaGasse, 2008). R-SMM is applied to clinical practice through the Transformational Design Model (TDM). The TDM identifies the basic steps common to therapy (assessment, setting goals and objectives, designing functional activities, applying outcomes of therapy to real life) with an added step involving the translation of non-musical functional activities to music-based functional activities. R-SMM creates the theoretical framework and is integrated into practice through the TDM (Thaut, Thaut, and LaGasse, 2008). A hallmark of this model is the use of theory to inform the intervention strategies for non-music functional outcomes.

Music-centered music therapy exemplifies the inherent experience of making music as the medium of therapeutic change (Aigen, 2005). Improvisatory models of music therapy such as Creative Music Therapy and Analytic Music Therapy place music as the central feature of the therapeutic

relationship, modifying the musical characteristics in response to client changes. In Creative Music Therapy (a.k.a. Nordoff-Robbins), assessment of sessions involves interpretation of the client-therapist relationship and client musical and non-musical responses. Characteristics of the music are viewed with specific meaning (e.g., triads, intervals, modes), and the therapist responds to the client through modifications of the musical elements (e.g., dynamics, melody, harmony, meter) in order to support and provide meaning to the musical improvisation. Analysis and interpretation of client outcomes are made in the context of the music and the response to the music (Aigen et al., 2008; Bruscia, 1987, 1988; Wigram, Petersen, and Bonde, 2004b).

Analytical Music Therapy (AMT) emerged in the 1970s as a client-directed model that fosters the inherent creativity in a client and facilitates access to conscious and unconscious material central to the client's problems (Priestly, 1994). Improvisation provides symbolic meaning paired with verbal processing to engage the whole person and promote positive growth (Bruscia, 1987; Priestly, 1994, 2012). The music provides a structural focal point between the therapist and client, creates a safe container for the client's expressive explorations (e.g., rhythmic repetition and melodic motifs), captures the complexity of the client's "story" (which may not be adequately expressed through words), and supports basic needs and the growth of identity (Purdon, 2002). Analysis of the music, often undertaken by the therapist and client, serves to give meaning to these experiences (Eschen, 2002).

The Improvisation Assessment Profiles (IAPs) (Bruscia, 1987) are an example of an assessment tool that analyzes the relationship between the elements of music and the psychological characteristics of the client. This assessment identifies these relationships through salience, integration, variability, congruence, and autonomy, concepts that Bruscia developed to frame musical analysis. These profiles may also include characteristics outside the music (e.g., in the client's body or in verbal discussion). Further analysis of rhythm, timbre, volume, texture, phrasing, and tonal elements examine the level of integration, variability, and autonomy in these musical elements. The integration and variability of the client's body movements are also evaluated, as well as the congruency between the musical elements, physical expression, improvisation and verbalizations, and music and personal relationships. The IAPs are grounded in psychodynamic and humanistic-existential theoretical frameworks (Bonde, 2005; Bruscia, 1987).

This is simply a brief overview of the extant body of literature that has contributed to an understanding of the relationship between human response and the characteristics of the music. Detailed descriptions of each example are beyond the scope of this article due to the detail and complexity of each approach. Of the existing models which illustrate the role of music in the therapeutic relationship, most were developed based on a particular client population and/or clinical setting (Bruscia, 1987) and evaluate the role of the music through a post-hoc analysis. However, they provide a context; music therapists clearly understand that interaction with the characteristics of the music is fundamental to desired client outcomes. Unfortunately, there still exists a dearth of research studies designed to thoroughly examine the music as a therapeutic mechanism (Bonde, 2005), and few methods exist

in which to organize and assess the music as a therapeutic modality for critical analysis and clinical interpretation.

Due to the varied characteristics of the musical elements and individual behavioral responses, music as an intervention modality is a complex intervention strategy (Kawar, Hanson-Abromeit, & Shoemark, 2010; Michie, Fixsen, Grimshaw, & Eccles, 2009), and describing these strategies using words is difficult (Rykov, 2011). However, without clear delineation of the role of music and transparent reporting of the intervention, music-based intervention strategies are difficult to evaluate and replicate (Armstrong et al., 2008; Kawar, Hanson-Abromeit, & Shoemark, 2010; Reschke-Hernandez, 2012; Riley et al., 2008; Robb & Carpenter, 2009; Robb, Burns, & Carpenter, 2011). Intervention reporting is being championed across disciplines and in music therapy (Conn & Groves, 2011; Des Jarlais, Lyles, & Crepaz, 2004; Gutman, 2010; Kawar, Hanson-Abromeit, & Shoemark, 2010; MacPherson et al., 2010; Michie, Fixsen, Grimshaw, & Eccles, 2009; Reschke-Hernandez, 2012; Robb, Burns, and Carpenter, 2011; Robb & Carpenter, 2009; Schulz, Altman, & Moher, 2010; Social Science & Medicine, 2010; Workgroup for Intervention Development and Evaluation Research, 2009). In order to report an intervention and evaluate its efficacy, a deeper understanding of the role of music is required.

Common understanding and clarity for a particular aspect of a professional practice can contribute to the foundational features of practice, promote therapist effectiveness and professional growth, and encourage development in research and practice. In order to accurately report music-based interventions, music therapists must have a clear understanding of how the basic elements of music (e.g., rhythm, melody, tempo) are collectively combined to create meaningful outcomes. Recognizing the unique value of previously developed models or approaches to the profession, this paper presents a shared system language to encourage transparent articulation of the therapeutic role of music. A shared system language has the potential to create greater capacity and competence for music therapy practice.

A system language is a formal common language used in research and practice to clearly define the technical vocabulary and principles of a particular field (Locke, Silverman, & Spirduso, 2010). Commonly used system languages are found in professional fields such as computer programming, medicine, and statistics. A system language is a shared language (i.e., words) used to symbolize a perceptual concept. Such a shared language creates greater functionality for the concept and opportunities to refine it (Locke, Silverman, and Spirduso, 2010; Fattor, 1988). Symbolic system language creates a conceptual framework or schema to "better describe and understand the overall system action" (Fattor, 1988, p. 323). A key component of a system language is how knowledge is translated for clinical decisions (Locke, Silverman, and Spirduso, 2010; Fattor, 1988).

Currently, music therapy has a fragmented system language, making it difficult to interpret and communicate intervention strategies, the role of music as a mechanism for change, and outcomes in a meaningful and consistent way. Each model or therapeutic approach in music therapy has a unique language specific to that particular model (e.g., the models described earlier, such as NMT, AMT, and NRMT). Contributions to the development and growth of a system language in music

therapy will help establish common reference points to provide greater continuity to the language used by music therapists, improve the ability to communicate with other professionals, and facilitate a deeper understanding of the therapeutic processes employed by music therapists.

A system language definition of the therapeutic function of music (TFM) has been proposed as "the direct relationship between the treatment goal and the explicit characteristics of the musical elements informed by a theoretical framework and/or philosophical paradigm in the context of the targeted client(s)" (Hanson-Abromeit, 2013, pp. 130–131). In essence, this definition is based on stated constructs of the individual musical elements relevant to therapeutic change. Taken as a whole, the musical elements inform the manner in which the music will be organized and integrated into the treatment strategy.

The *Therapeutic Function of Music (TFM) Plan* (see Appendix A) is a worksheet-based conceptual framework that creates effective goal-directed, theory-derived, music-based intervention strategies. The worksheet is designed to be flexible to philosophical orientation, technique, or methodology, to support the capability of the music therapist to translate their theoretical framework, clinical wisdom, and client needs and/or preferences into everyday practice. As a working framework, the *TFM Plan* provides a conceptual model of translation that refreshes and sustains the connection between theory and practice as the therapist grows in experience and knowledge. It is designed to be a reflective and interpretive process that illuminates the therapist's expertise and knowledge.

The TFM Plan Worksheet

The ability to analyze what is changing in clients as a result of the intervention contributes to research and practice. An in-depth systematic process to describe the therapeutic function of music can create opportunities to discover what aspects of the music, in the context of an intervention, worked and why. Such a systematic process can be used as a resource in education and training, clinical practice at the treatment-planning stage, or in research when developing intervention strategies for study. The *Therapeutic Function of Music Plan* is organized as a worksheet to structure the organization of knowledge to support the articulation of the musical elements to best support the integration of the musical elements and integration of the treatment goal, music, and evidence-based intervention strategy.

The worksheet is composed of sections that function sequentially and reciprocally: problem statement, musical element, theoretical framework, implications of theory to musical element, and intent of musical element. The musical elements are viewed by rows so there is continuity in the relationship between the musical element, theoretical framework, purpose, and ultimately the description of the musical element to inform the synthesis of the music-based stimulus to address the goal. The sophistication and depth of this working document are intended to evolve with the knowledge and experience of the music therapist using the tool. In other words, novice therapists may be broader and more general in their descriptions of the sections, whereas a more experienced therapist with a proficient level of expertise with a particular population may have more specificity and depth to the descriptions.

The *TFM Plan* is an organizational strategy for the breadth of information pertinent to effective treatment strategies. It is an

ante-hoc process; in other words, the *TFM Plan* guides intervention development prior to treatment implementation (Fellmeth & Horwitz, 2011; Michie, Fixsen, Grimshaw, & Eccles, 2009). Utilization of the *TFM Plan* informs the development of music-based intervention strategies. As an ante-hoc process, it is prescriptive in nature; however, it provides a tool to evaluate the specific structural characteristics of the music to determine the fidelity of the music (i.e., did the music actually do what the therapist or therapeutic process intended?). Therefore, it is a tool to support the process of evaluating the effectiveness of music in the therapeutic context. In order to illustrate this further, the following is a description of each section of the worksheet. The author recommends that the reader have a copy of the *TFM* plan alongside as he/she reads the following sections.

Problem Statement: *Goal or focused direction of change*

The first section of the worksheet states the treatment goal and is supported by a rationale that identifies the client and/or population problem to be addressed. Identification of the problem and subsequent treatment goal creates intentionality and frames the *TFM Plan*. The problem statement clearly focuses the intent for therapeutic change. This statement provides the foundation for the remaining sections of the worksheet.

Musical Elements: *Operational definition of the musical elements*

Music is a term that is universally understood. However, it is conceptually defined based on myriad criteria for the listener or performer (e.g., environment, experience, culture, preference). A conceptual or theoretical definition tends to be broad and abstract. It can be understood by anyone, but can have multiple interpretations or operational definitions (Cooper, 1998; Marx, 2004; Wieland, Manheimer, & Berman, 2011). As such, a conceptual definition of music can limit the scope of application and understanding. Lack of clarity for the primary modality in music therapy, the music itself, can lead to misinterpretations in both the use of music and the therapeutic intent. Efforts to operationalize concepts utilized in music therapy practice and research can lead to deeper and more accurate understanding and interpretation.

An operational definition of music can contribute to improved clinical practice and research through a process of standardization, transparency, and comparison (Wieland, Manheimer, and Berman, 2011) by defining the presence or absence of properties that are either observable or controlled (Sager, 1976). An operational definition provides a clear meaning of a construct that can be interpreted by people from various backgrounds. An operational definition of the musical elements requires the music therapist to define the construct of the musical elements in a way that is meaningful and identifiable to an intervention. For example, an operational definition of dynamics could be "a noticeable change in the emphasis of loudness." Such a definition can be traditional (e.g., a dictionary) but may also be defined in relation to the clients' abilities and preferences, or the context of the goal.

Operational definitions of the musical elements will minimize ambiguity and erroneous interpretations and improve the development of a theoretical framework (Marx, 2004). Operationally defining the musical elements will also facilitate a standardized understanding of the musical elements in relation to a particular treatment goal. This will contribute to simplified comparisons of varying treatment strategies among therapists or across research studies. As operational definitions are developed, it is important

to keep in mind that such definitions will shift and operational definitions should inform, but not limit, methodology or therapeutic intent (Houts & Baldwin, 2004; Marx, 2004).

Theoretical Framework (WHY it is necessary): *Describes why the music element will be able to address the problem; informed by researcher/clinician expertise, client population and/or diagnosis, and music & non-music basic science*

Theory provides a foundation in which to design intentional interventions. Interventions guided by a theoretical framework allow for deeper analysis of how and why an intervention was or was not effective (Burns, 2012; Robb, 2012). The opportunity for such an analysis creates knowledge in understanding the complexity of music in relationship to the complexity of the client and therapeutic characteristics (Robb, 2012). Such explicit knowledge will support greater efficacy in clinical practice and more consistent outcomes in both research and practice (Burns, 2012). A theoretical framework will also increase the rigor of the intervention design and bridge the gap between research and practice, forming a better relationship between the two (Burns, 2012).

A theoretical framework will also provide clarity in distinguishing variables that can be changed and the appropriate methods to deliver an intervention (Burns, 2012). Linking aspects of theory to the specific musical element will illustrate a direct connection between the characteristics of the musical elements, the knowledge of the therapist, and their application to client goals. Thus, a clearer articulation can be made as to *why* a particular musical element will effectively address the treatment goal or be counterintuitive to treatment as a contributing characteristic of music as a whole modality.

The depth of the theoretical framework will evolve based on the explicit (e.g., training, familiarity with research, and use of evidence-based practice) and implicit knowledge (e.g., experience) of the therapist or researcher. Yet, at each stage, a theoretical framework will create a meaningful context to articulate the work of music therapy to the therapist and others. Theory is used in music therapy practice and research, but it is often applied as a general theoretical framework rather than as one specific to the role of each musical element to address the treatment goal. There are overarching theories to be utilized in this section, but the primary objective is to gather information that will specifically inform why the specific musical element may be effective in addressing the treatment goal. Moreover, the theoretical framework will inform *what* role a musical element has to support the goal and *how* the musical element will be structured and/or utilized to address the intended treatment goal.

Purpose of Musical Element (WHAT it will do): *Rationale for the value or usefulness of the musical element to support the goal based on the theoretical framework*

The Purpose of Musical Element column of the *TFM Plan* requires the music therapist to interpret and articulate the value or usefulness of the musical element to support the therapeutic goal. The theoretical framework will guide the purpose of the musical element to determine what the musical element supports and how the characteristics of the musical element may be modified for meaningful therapeutic change. This column will determine what specific musical elements are key to therapeutic change and in what way. The key elements of music, supported by the theoretical framework, facilitate the design

of the intervention for intentional change within the treatment process. Thus, the Purpose column informs the explicit description of the music-based stimulus, and provides a clear articulation of the role of the music in the therapeutic process, a task that is clearly a hallmark of music therapy practice.

Explicit Description of Musical Element (HOW it will be arranged): *Describes the structure of the musical element (e.g., form, shape, amount, quantity, to what extent/degree)*

Trends in the health and behavioral sciences are setting precedence for adequate reporting of interventions as part of evidence-based practice and stronger advancement of research studies in various fields. The *TFM Plan* creates a framework within which to reflect and evaluate the well-documented responses to music that are individual and varied. Detailed descriptions of the musical stimulus are necessary to clearly understand the responses of clients to the music-based intervention and to be able to separate the stimulus from the effectiveness of the interventionist. Conceptually, if client responses match the ante-hoc description of the music, then the theoretical construct can be strengthened and further tested. If not, further exploration of the musical characteristics that contributed to change is needed. Like other professions that offer complex interventions, music therapy needs a method and system language to guide the reporting of complex interventions that are specific to the profession (Conn & Groves, 2011).

The Explicit Description of Musical Element column requires the therapist to describe how each identified element of music will be structured and applied for efficacious intervention toward the treatment goal. The theoretical framework and the purpose of the musical element outlined in the previous columns of the worksheet directly inform the explicit description of the musical element. Intervention content in music-based intervention reporting recommends "precise details of the music intervention and…descriptions of procedures for tailoring interventions to individual participants" (Robb, Burns, & Carpenter, 2011, p. 344). Explicit descriptions created prior to implementation of an intervention provide a traceable context in which to identify the effective characteristics of the intervention for post-intervention evaluation and reporting. Ante-hoc descriptions of the musical elements provide a framework for the development of the intervention content and support post-intervention reporting and evaluation (Michie, Fixsen, Grimshaw, & Eccles, 2009).

Theory-Based Synthesis of the Music: *Comprehensive description of the characteristics of the musical elements; gives meaning to music as a "whole" to be implemented in intervention strategies*

There are a multitude of approaches to clinical practice and the use of music for therapeutic means. For many, a distinct way of thinking and approaching therapy is based on previous clinical training or practices in the clinical facility. Approaching the therapeutic functions of music in a systematic manner facilitates options for therapeutic interventions. Breaking apart music into specific components and applying theory and purpose to each element creates an opportunity to organize this knowledge into manageable and meaningful parts. The majority of the worksheet is devoted to this task, creating a pathway to analyzing the role of that particular musical element. However, analysis is not complete until a synthesis of the accumulated information occurs and the therapist organizes, interprets, and gives meaning to the emerging patterns of knowledge applicable to the treatment goal (Brown, 2009). The process of analyzing and synthesizing knowledge is part of making intervention decisions from a variety of options. Therefore, the final section of the worksheet is a synthesis of the previous columns.

In essence, the *TFM Plan* has required the therapist to consider the role of each element of music separated from its whole form. But the meaning of the music as a therapeutic strategy is complete only when the musical elements are blended into a whole. The final section of the *TFM Plan,* the Theory-Based Synthesis of the Music, requires the expertise of the music therapist to re-create meaning for the music as a blended combination of the musical elements for intentional application to the treatment goal. The synthesis is grounded in theory, is built upon meaningful characteristics with purposeful intent, and is explicit in its role for treatment. If there is more than one treatment objective related to the identified goal, then the synthesis may change, either slightly or greatly, based on the objective.

Not only will the Theory-Based Synthesis of the Music guide music-based intervention development and application, but it will also provide a rationale to share with others why music would be an effective treatment modality. Music therapists do not work in isolation, yet the unique application of the art of music requires music therapists to be able to provide a basic justification for recommending and implementing treatment. Characteristics of the treatment modality must be clearly understood by the client and music therapist in order to provide an intentional path to treatment. They must also be understood by those who refer clients, work within the context of the interdisciplinary treatment team, pay for services, and support legislative regulation. Therefore, the *TFM Plan* is a proposed common methodology of articulating the role music has in the treatment process.

Conclusion

A central question that continues to be present in music therapy education, practice, and research is "Why music?" For this author, the process of discovery has resulted in a search for greater meaning as to the role of the elements of music as a therapeutic strategy and how to best attach intentional meaning to the therapeutic function of music in teaching, clinical practice, and research. Discovery has led to the development of a method of organizing a therapist's theoretical framework to more clearly articulate what informs the intentional functionality of the music in relation to the client(s) and the treatment goal. This then provides a system language for the therapeutic function of music. The methodology of the *TFM Plan* attempts to transcend the boundaries of one model, philosophical or theoretical paradigm, clinical setting, or client population so that a theory-based ante-hoc conceptual plan can define the role of music within the therapeutic relationship.

The *TFM Plan* does not limit the use of other models (e.g., in a post-hoc analysis of the music therapy experience), but intends to bridge the understanding of music in relation to the clinical problem being addressed in treatment or research. The proposed process to the therapeutic function of music is admittedly influenced by the author's experiences and knowledge and may feel like a "top-down" approach. But the articulation of the worksheet characteristics may also be used from a bottom-up perspective to trace backward the role of music. Bruscia (1998) asks:

Exactly where does the music reside—in the person, the process, or the product—and how does this determine the boundaries of music experience? On which of these should aesthetic or artistic standards be applied? Does the meaning and beauty of the music reside in the person of the client, the process that the client undergoes to participate in the music, or the actual musical product that results? (pp. 91–93)

Articulation of the musical elements in the therapeutic context can support the profession's understanding of such questions.

The *Therapeutic Function of Music Plan* proposes an ante-hoc conceptual methodology as a mechanism to advance the profession, shift paradigms, and move toward a deeper understanding of the characteristics of the music that contribute to the efficacy of an intervention. Perhaps the *TFM Plan* can provide meaning for the use of music as a modality in goal-directed interventions and open up the possibilities to create traceable intervention strategies to be directly connected to the treatment goal and client outcomes. Thus, the *TFM Plan* can support music therapists' deeper understanding of the questions "how" and "why" music is effective, making such an understanding more accessible to students and professionals, clients, complementary therapies (e.g., physical, occupational, and speech therapies), medical personnel, administrators, and legislators of music therapy. At the same time, the strategic process outlined in the worksheet can differentiate the unique expertise of the music therapist from other professionals' use of music-based applications.

There are several limitations to this conceptual framework. First, the worksheet and supporting rationale for each section have an implicit bias due to the area of clinical and research expertise, experience, and training of the author. Second, the worksheet may be limited in its application because it was developed as a teaching model. It has been vetted and implemented with a limited group of undergraduate and graduate students over several years within two university training programs in the Midwestern United States. Anecdotally, students have found it to be challenging yet useful. It is challenging, as it requires the integration of knowledge and the critical interpretation and application of that knowledge. Yet, it has also been embraced as a model to help students identify more clearly the role of the music in the design and implementation of intervention strategies. Appendices B and C provide student-based illustrations of this process, completed as part of their treatment-plan development for clinical rotations. A first-semester practicum student wrote Appendix B, and a graduate equivalency student, during her sixth semester of practicum, wrote Appendix C (students granted permission to use their materials in publication). Both are presented as examples of the *Therapeutic Function of Music Plan* process and are not to be interpreted beyond that function.

Music therapists use music-based interventions within the context of a therapeutic relationship. A third limitation of this manuscript is its discussion of only one aspect of music therapy, the music. It is not intended to minimize the therapeutic relationship. Instead, the *Therapeutic Function of Music Plan* offers a framework for a deeper understanding of the relationship between the music, the client(s), the therapist, and the outcomes. Finally, the *TFM Plan* is a conceptual working model that is intentionally vague. The ambiguity is a limitation, but as a worksheet-based process it is designed to foster critical interpretation and integration of knowledge that can be modified based on the problem statement, theoretical orientation, and clinical experience of the therapist, the needs of the client(s), and the understanding of

music as a therapeutic mechanism. Exploration and utility of the *TFM Plan* with different populations, philosophical paradigms, models of practice, and research will help define its validity and usefulness to music therapy research and practice.

This *TFM Plan* worksheet was not designed to imply less value to music as a "whole." In breaking music down to its specific parts (e.g., tempo, melody, rhythm), there is the risk of taking away the musical meaning; however, a stronger understanding of the role of the music, or the particular musical element, in relation to the desired outcomes may emerge. In addition, careful examination of the musical elements in the context of therapy creates a common or system language with which to articulate this understanding to others. Organizational plans can reduce the mystery of creating, implementing, and evaluating effective therapeutic strategies. Utilizing the *Therapeutic Function of Music Plan* will elevate the music therapists' expertise in how music is used in a therapeutic context. In other words, dissection provides understanding; re-creating it into the whole creates meaning. Some may argue that music cannot be broken down into the individual elements; however, it is through such a breakdown and an explicit articulation of the complexity of the music therapist's primary modality of treatment that music can be created into a meaningful whole with intentionality and clarity of purpose.

The worksheet is not intended to promote any particular philosophical paradigm or preexisting model of music therapy. Current models have been designed for a particular client population or clinical setting and have strengths for which they were designed (Bruscia, 1987). The *TFM Plan* is designed to support the music therapist's predetermined understanding of the components of music in order to facilitate intervention development and evaluation. However, as an ante-hoc process (done prior to, or in the early stages of, treatment), the music therapist can utilize this methodology in conjunction with other analytical post-therapy evaluative processes. Such paired evaluation will better solidify the fidelity of music (i.e., whether the music did what the therapist and/or client desired it to do) within the treatment process. In addition, this methodology has the potential to contribute to the development of theory in music therapy research and practice.

Defining and articulating the therapeutic function of music in a systematic manner will benefit music therapy in several ways. First, it will create a framework to explain the therapeutic effect of music on behavior. Second, it will generate consistent application of the unique characteristics of the music so that the musical response can be more consistently directed to a therapeutic response. Third, it will support the development of clinical methodologies to create predictable outcomes based on specific applications of music. Finally, it will foster an understanding of music as a therapeutic medium so that other professionals will recognize the specialization of music therapy.

References

Abrams, B. (2011). Understanding music as a temporal-aesthetic way of being: Implications for a general theory of music therapy. *The Arts in Psychotherapy*, *38*, 114–119.

Aigen, K. (2005). *Music-centered music therapy*. Gilsum, NH: Barcelona Publishers.

Aigen, K., Miller, C. K., Kim, Y., Pasiali, V., Kwak, E.-M., & Tague, D. B. (2008). Nordoff-Robbins music therapy. In A.-A. Darrow (Ed.), *Introduction to approaches in music therapy* (2nd ed., pp. 61–77). Silver Spring, MD: American Music Therapy Association.

Alvin, J., & Warwick, A. (1991). *Music therapy for the autistic child* (2nd ed.). Oxford: Oxford University Press.

Armstrong, R., Waters, E., Moore, L., Riggs, E., Cuervo, L. G., Lumbiganon, P., & Hawe, P. (2008). Improving the reporting of public health intervention research: Advancing TREND and CONSORT. *Journal of Public Health*. *30*, 103–109.

Bonde, L. O. (2005). Approaches to researching music. In B. Wheeler (Ed.), *Music therapy research* (pp. 489–525). Gilsum, NH: Barcelona Publishers.

Brown, T. (2009). *Change by design: How design thinking transforms organizations and inspires innovation*. New York: HarperCollins.

Bruscia, K. E. (1987). *Improvisational models of music therapy*. Springfield, IL: Charles C. Thomas.

Bruscia, K. E. (1988). A survey of treatment procedures in improvisational music therapy. *Psychology of Music*, *16*, 10–24. doi:10.1177/0305735688161002

Bruscia, K. E. (1998). *Defining music therapy*. Gilsum, NH: Barcelona Publishers.

Burns, D. S. (2012). Theoretical rationale for music selection in oncology intervention research: An integrative review. *Journal of Music Therapy*, *49*(1), 7–22.

Clair, A. A., Pasiali, V., & LaGasse, B. (2008). Neurologic music therapy. In A.-A. Darrow (Ed.), *Approaches in music therapy* (2nd ed., pp. 153–172). Silver Spring, MD: American Music Therapy Association.

Conn, V. S., & Groves, P. S. (2011). Protecting the power of interventions through proper reporting. *Nursing Outlook*, *59*, 318–325. doi:10.1016/j.outlook.2011.06.003

Cooper, H. (1998). *Synthesizing research: A guide for literature reviews* (3rd ed.). Thousand Oaks, CA: SAGE Publications.

Copeland, A. (2002[1939]). *What to listen for in music*. New York: Penguin Books, Signet Classic Printing.

Davis, W. B., & Gfeller, K. E. (2008). Music therapy: Historical perspective. In W. B. Davis, K. E. Gfeller, & M. H. Thaut (Eds.), *An introduction to music therapy theory and practice* (3rd ed., pp. 17–39). Silver Spring, MD: American Music Therapy Association.

Davis, W. B., Gfeller, K. E., & Thaut, M. H. (Eds.). (2008). Glossary of terms. *An introduction to music therapy theory and practice* (3rd ed., pp. 541–553). Silver Spring, MD: American Music Therapy Association.

Des Jarlais, D. C., Lyles, C., & Crepaz, N. (2004). Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: The TREND statement. *American Journal of Public Health*, *94*, 361–366.

Eschen, J. T. (2002). Analytical music therapy: Introduction. In J. T. Eschen (Ed.), *Analytical Music Therapy* (pp. 17–33). London: Jessica Kingsley Publishers.

Fattor, R. A. (1988). Need for a symbolic system language (comment on a Maude Abbott lecture). *Modern Pathology*, *4*, 323–324.

Fellmeth, A. X., & Horwitz, M. (2011). Ante-hoc. *Guide to Latin in international law*. Oxford: Oxford University Press. Retrieved from http://www.oxfordreference.com.www2.lib.ku.edu/view/10.1093/acref/9780195369380.001.0001/acref-9780195369380-e-221?rskey=LekTNN&result=1

Gaston, E. T. (1968). Man and music. In E.T. Gaston (Ed.), *Music in therapy* (pp. 7–29). New York: Macmillan.

Gfeller, K. (2008). Music: A human phenomenon and therapeutic tool. In W. B. Davis, K. E. Gfeller, & M. H. Thaut (Eds.), *An introduction to music therapy theory and practice* (3rd ed., pp. 41–75). Silver Spring, MD: American Music Therapy Association.

Gutman, S. A. (2010). Reporting standards for intervention effectiveness studies. *American Journal of Occupational Therapy*, *64*, 523–527.

Hanser, S. B. (1999). *The new music therapist's handbook* (2nd ed.). Boston: Berklee Press.

Hanson-Abromeit, D. (2013). Therapeutic function of music. In K. Kirkland (Ed.), *International dictionary of music therapy* (pp. 130–131). New York: Routledge.

Hanson-Abromeit, D., Shoemark, H., & Loewy, J. (2008). Music therapy in the newborn intensive and special care nurseries. In D. Hanson-Abromeit and C. Colwell (Eds.), *AMTA monograph series: Medical music therapy for pediatrics in hospital settings: Using music to support medical interventions*. Silver Spring, MD: American Music Therapy Association.

Heiderscheit, A. (2015). Use of the iso principle as a central method of mood enhancement: A music psychotherapy clinical case study. Advance online publication. doi:10.1093/mtp/miu042

Houts, A. C., & Baldwin, S. (2004). Constructs, operational definition, and operational analysis. *Applied & Preventive Psychology*, *11*, 45–46. doi:10.1016/j.appsy.2004.02.007

Kawar, M., Hanson-Abromeit, D., & Shoemark, H. (November 2010). *Music-Based Intervention Reporting in the NICU*. Research Poster Session for the American Music Therapy Association's 12th Annual Conference, Cleveland, OH.

Locke, L. F., Silverman, S. J., & Spirduso, W. W. (2010). *Reading and understanding research* (3rd ed.). Los Angeles: SAGE Publications.

MacPherson, H., Altman, D. G., Hammerschlag, R., Li, Y., Wu, T., White, A., Moher, D, on behalf of the STRICTA Revision Group. (2010). Revised standards for reporting interventions in clinical trials of acupuncture (STRICTA): extending the CONSORT statement. *Acupuncture in Medicine*, *28*, 83–93. Retrieved from http://aim.bmj.com/content/28/2/83.full.pdf+html?sid=4547f058-3062-4f5f-87bf-9b3423adb6d9

Marx, M. H. (2004). Operational definition. In *The concise Corsini encyclopedia of psychology and behavioral science*. Retrieved from http://search.credoreference.com/content/entry/wileypsych/operational_definition/0

Merriam, A. P. (1964). Uses and functions. In *The anthropology of music* (pp. 209–227). Evanston, IL: Northwestern University Press.

Michie, S. Fixsen, D., Grimshaw, J. M., & Eccles, M.P. (2009). Specifying and reporting complex behavior change interventions: The need for a scientific method. *Implementation Science 4*, 40. doi:10.1186/1748-5908-4-40 [Open access retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2717906/]

Priestley, M. (1994). *Essays on analytical music therapy*. Phoenixville, PA: Barcelona Publishers.

Priestley, M. (2012). *Music therapy in action* (2nd ed.). Gilsum, NH: Barcelona Publishers.

Purdon, C. (2002). The role of music in analytical music therapy: Music as a carrier of stories. In J. T. Eschen (Ed.), *Analytical music therapy* (pp. 104–114). London: Jessica Kingsley Publishers.

Reschke-Hernandez, A. (2012). Music-based intervention reporting for children with autism: Implications for music therapy publication guidelines. *Music Therapy Perspectives*, *30* (2), 167–175.

Riley, B. L., MacDonald, J., Mansi, O., Kothari, A., Kurtz, D., von Tettenborn, L. I., & Edwards, N. C. (2008). Is reporting on interventions a weak link in understanding how and why they work? A preliminary exploration using community heart health exemplars. *Implementation Science*, *3*(27). Retrieved from http://www.implementationscience.com/content/pdf/1748-5908-3-27.pdf

Robb, S. L. (2012). Gratitude for a complex profession: The importance of theory-based research in music therapy. *Journal of Music Therapy*, *49* (1), 2–6.

Robb, S. L., Burns, D. S., & Carpenter, J. S. (2011). Reporting guidelines for music-based interventions. *Journal of Health Psychology*, *16*, 342–393.

Robb, S. L., & Carpenter, J. S. (2009). A review of music-based intervention reporting in pediatrics. *Journal of Health Psychology*, *14*, 490–501.

Rykov, M. (2011). Writing music therapy. *Voices: A World Forum for Music Therapy*, *11*(1). Retrieved from https://normt.uib.no/index.php/voices/article/view/288/448

Sager, E. (1976). Operational definition. *Journal of Business Communication*, *14*(1), 23–26.

Schulz, K. F., Altman, D. G., & Moher D. (2010). CONSORT 2010 statement: Updated guidelines for reporting parallel group randomised trials. *BMJ*, *340*, c322. doi: http://dx.doi.org/10.1136/bmj.c332

Social Science and Medicine. (2010). *Guidelines for reporting evaluations of health behavior interventions*. Retrieved from http://journals.elsevier.com/02779536/social-science-and-medicine/1/40-journal-policies/77-guidelines-for-reporting-evaluations-of-health-behaviour-interventions/

Thaut, M. H. (2000). *A scientific model of music in therapy and medicine*. San Antonio, TX: IMR Press.

Thaut, M. H. (2005). *Rhythm, music, and the brain*. London: Taylor & Francis.

Thaut, M., Thaut, C., & LaGasse, B. (2008). Music therapy in neurologic rehabilitation. In W. B. Davis, K. E. Gfeller, & M. H. Thaut (Eds.), *An introduction to music therapy theory and practice* (3rd ed., pp. 261–304). Silver Spring, MD: American Music Therapy Association.

Wieland, L. S., Manheimer, E., & Berman, B. M. (2011). Development and classification of an operational definition of complementary and alternative medicine for the Cochrane Collaboration. *Alternative Therapies in Health and Medicine*, *17*(2), 50–59.

Wigram, T., Pedersen, I. N., & Bonde, L. O. (2004a). Introduction to music therapy. In *A comprehensive guide to music therapy: Theory, clinical practice, research, and training* (2nd ed., pp. 17–43). London: Jessica Kingsley Publishers.

Wigram, T., Pedersen, I. N., & Bonde, L. O. (2004b). Models and methods of music therapy. In *A comprehensive guide to music therapy: Theory, clinical practice, research and training* (2nd ed., pp. 113–150). London: Jessica Kingsley Publishers.

Workgroup for Intervention Development and Evaluation Research. (2009). *WIDER recommendations to improve reporting of the content of behavior change interventions*. Retrieved from http://www.implementationscience.com/content/supplementary/1748-5908-7-70-s4.pdf

Appendix A
Therapeutic Function of Music Plan Worksheet

Problem Statement: *goal or focused direction of change; rationale*

Musical Element: *Operational definition of the musical element*	Theoretical Framework: (*__WHY__ it is necessary*). *Describes why the music element will be able to address the problem; informed by the researcher/clinician expertise, client population and/ or diagnosis, and the music & non-music basic science.*	Purpose of musical element: (*__WHAT__ it will do*) *Rationale for the value or usefulness of the musical element to support the goal based on the theoretical framework.*	Explicit description of the musical element: (*__HOW__ it will be arranged*) *Describes the structure of the musical element (e.g. form, shape, amount, quantity, to what extent/ degree)*
Timbre			
Rhythm			
Tempo			
Pitch			
Melody			
Dynamics			
Lyrics			
Form			
Harmony			
Style			

Theory-based Synthesis of the Music: *Comprehensive description of the characteristics of the musical elements; gives meaning to music as a "whole" to be implemented in intervention strategies*.

This worksheet may be reprinted and used without permissions for teaching, clinical practice and research. The author requests that any modifications to the worksheet or process be communicated with her so that further dialogue and/or development of the process can occur. Please cite as: Hanson-Abromeit, D. (2015). A conceptual methodology to define the Therapeutic Function of Music. Music Therapy Perspectives. Advance online publication. doi:10.1093/mtp/miu061

Appendix B
Therapeutic Function of Music Plan Example

Author's Note: This is an example of how the TFM Plan worksheet was completed by one undergraduate student in her first-semester clinical rotation. This example is included as an illustration of this process and should not be interpreted in any other way. The music elements were defined as a separate class assignment and are not included in the worksheet illustration to preserve space.

Problem Statement:

Rationale: Music is closely related in human beings to speech and language both neurologically and developmentally. Music and speech develop in parallel fashion in adjacent areas of the brain. They share the same acoustic and auditory parameters, including frequency, intensity, wave forms, timbre, duration, rate, contour, rhythm, and cadence factors (Edgerton, 1994). Music is perceived and produced in patterns such as pitch, melodic contour, rhythm, and form. Pattern perception and production are also a phenomenon for speech and language (Patel, 2008). Teenagers with Down syndrome have significant delays in speech and language skills that affect their progress during their secondary school years. The social and emotional effects of limited spoken-language abilities become more significant during this life stage, and will affect the quality of life of adults with Down syndrome if they are not addressed (Buckley, 2000).

Treatment Goal: To improve speech

Musical Element	Theoretical Framework	Purpose of Musical Element	Description of Musical Element
Melody	Melodic songs can stimulate a center in the brain that analyzes different sequences of pitch, and processes the melodic patterns (Broca's area) (Berger, 2002). MIT (Melodic Intonation Therapy) is also effective in improving speech production (Thaut, 2005).	Melodic contour will facilitate the center to intone the prosody of letters or words in songs. This will eventually lead to proper speech production. The SMT needs to follow all steps of the MIT technique. Sentence structure should be explained through the use of melody lines. Melodies should be repetitive and easy to remember.	The melody used in the interventions should be simple, incorporating stepwise motion and pitch sequences related to speech intonations. The melodies should be easy for the client to sing, repetitive, and should end with closure through dominant-to-tonic motion. They should be using diatonic scales.
Pitch	Pitch is integrated into melody through different pitch sequences. Children with Down syndrome lack speech affect; however, they can imitate pitches in melodic patterns in songs, and produce prosody in musical speech (Edgerton, 1994; Wigram, 2000). Teens with Down syndrome are perceived as having gruff and low-pitched voices (Pryce, 1994).	Pitches used in the melodies should be appropriate for the range of the client. The different pitches in each melody should accurately imitate inflection patterns of each word. Modeling speech and singing by the SMT should fit in the vocal range of the client as well.	The client has a low speaking voice and sings monotone when effective prompting for emphasis on certain syllables and inflection patterns is not given. Therefore, the music should all be organized between the notes A3 and A4 on the staff. Each pitch should reflect emphasis and inflection that correlates to each accented syllable of a word. For example, in singing the word "today," the note for "to" should be lower than the note for "day." When we speak the word "today," our speaking voices go up on the syllable "day"; therefore, the SMT and client should sing it that way.
Rhythm	Rhythm is considered one of the most important elements in learning spoken behavior (Thaut, 2005). Every word, when divided into its syllabic rhythm, displays patterns. The functions of patterns in speech and language can be found in musical patterns incorporated by rhythm. In music, rhythm provides the temporal ordering of sounds and is perceived as a temporal figure based on the beat patterns (Berger, 2002).	Rhythmic patterns during interventions need to be consistent and be repetitive in nature. Every rhythm needs to effectively assist the client in self-regulating speech. Rhythmic Speech Cueing needs to be implemented throughout the session to correct stuttering (Thaut, Thaut, and LaGasse, 2008). Call and response techniques can be used with rhythm in the session to facilitate accurate inflection patterns or fluency patterns.	RSC could be used with a metronome as an intervention to ensure a consistent and steady beat. Clapping would be used to facilitate regular breathing. Each rhythm produced by the SMT needs to end without any anticipation, and should end on the fourth downbeat, never on the upbeat. Creating closure for each rhythmic pattern provides structure and familiarity for the client.
Dynamics	Dynamics indicate intention and emotion of a musical passage. Music dynamics parallel human dynamics in terms of moods, levels of excitability, and physical and psychological states. The ability to perceive and produce dynamics in music can be used in the perception and production of the dynamics of speech, which also indicate the urgency and level of the emotional state (Berger, 2002; Thaut, 2005).	The dynamics used in each song should match the dynamics that would be used if the client were to speak the words in a conversation. The volume in each application should speak to the emotional intent of any communication pattern. Lower decibel levels are also generally preferred over higher ones. Moreover, with the help of rhythmic patterns, stressing different words of the sentence by increasing the volume will add to the comprehension and production of the sentence.	Songs should not be played or listened to over 80 decibels. When singing, the SMT should emphasize certain parts of words that need to be stressed by increasing the volume. For example, the first letter of a word that the client has difficulty articulating or a syllable that needs to be stressed may be sung louder each time it appears in a song.

Musical Element	Theoretical Framework	Purpose of Musical Element	Description of Musical Element
Harmony	Not applicable for this client's specific needs.	N/A	N/A
Form	Form is the combination of musical elements within a given time frame. It elicits anticipation of structural closure. Perception of musical form is often related to the semantic and pragmatic aspects of language (Berger, 2002).	The musical form for each intervention should shape a pattern through the repetition of musical elements, making it easy for the client to anticipate what musical pattern is coming next. The songs should be structured so there is a clear beginning, middle, and end to each. The form of each intervention should facilitate the learning of appropriate sentence structure.	A clear structure of verse and chorus should be set up for each song. Each section of the form should end with a perfect authentic cadence, giving closure to one section before beginning a new section. The melody should support the form by clearly outlining how a tune begins, where it goes, and how it will conclude. This usually involves stepwise melodies.
Tempo	The tempo used in any intervention will make all the difference between an enthusiastic or apathetic reception of a song. Which mood the music provokes is the interaction of tempo with other elements (Nordoff, 1983).	Tempo should always be clearly established before incorporating melody into an intervention. Adapt playing or singing perceptively to meet the constantly changing circumstances of the client's abilities and behaviors. When working on fluency, the tempo for the interventions should accurately match the pacing for appropriate speech patterns.	The SMT will often begin with a steady rhythm pattern equivalent to the client's needs at that very moment. The SMT may start each application by regulating the breath of the client with a steady beat. This may be done through the tapping of rhythm sticks, clapping, or tapping the foot. The tempo should correspond to the client's current state of arousal. Depending on each application, the SMT will modify the tempo to elicit certain responses from the client. It may need to be slowed in order to relax a client or get them to decrease their rate of speech. The tempo may need to be faster to facilitate appropriate fluency and pacing. The chosen tempo needs to provide enough time to practice accurate articulation of target sounds or phrases.
Timbre	Timbre provides texture to a sound. The combination of timbre and tone qualities enables one to identify and differentiate between various instrumental and vocal qualities. Voice production includes considerations regarding overtones, undertones, and the anatomical architecture of the vocal cords (Schneck, 2006).	The use of instruments of parallel timbres can play a major role in helping address auditory and language difficulties. Using instruments of similar timbres will help in minimizing stimuli in a session. Instruments with simple timbres do not demand copious amounts of attention, making it easy to focus on the goal at hand.	Understanding the client's tolerance of timbres is very important. The SMT should speak and sing in the middle range of their voice, as well as the client's (A3 to A4). Singing and speaking in this comfortable middle of the voice range brings familiarity to the client and does not introduce harsh colors and timbres to the client. Therefore, it would also be important to use a small range of notes within the music and introduce new timbres in a manner that is complementary to the timbre of the voice.
Style	Using client-preferred music facilitates more effective therapy due to familiarity.	Musical styles will support effectiveness of therapy. The SMT should interview the client himself as well as the family to find out what kind of music motivates the client. Inferring from the client's background is also a good place to start when looking for material for the session.	The style of the music should be familiar to the client, as well as something that engages him. It should have a simple melody and basic accompaniment patterns. The tempo should be appropriate for the client's arousal state.

Musical Element	Theoretical Framework	Purpose of Musical Element	Description of Musical Element
Lyrics	When lyrics match the objective, they give each other power and communicate the same message (Pinkerton, 1996). If Melodic Intonation Therapy is being implemented, the client should be given lyrics that match the set objective.	Lyrics serve an articulation purpose when working on speech. The lyrics should correlate with the target sounds the SMT is addressing. The vocabulary and sentence structure of the lyrics should support the current cognitive level of the client.	The lyrics need to consist of age-appropriate vocabulary, with repetitive phrases made up of words with the sounds "sh," "r," and "th."

TFM Plan developed by Katie Martin at the University of Kansas, 2013 (used with permission).

Theory-based Synthesis for Music Stimuli:

Music to improve speech for an adolescent male with Down syndrome should include the following characteristics: simple, stepwise melodic contour, in a client-directed singable range (A3 to A4), using pitch diatonic sequences that are similar to speech intonations; melodies should be repetitive and close with a dominant-to-tonic motion; pitches should reflect emphasis and inflection that correlate to each accented syllable of a word; lyrics use repetitive phrases made up of age-appropriate vocabulary words with the sounds "sh," "r," and "th"; song form is verse-chorus structure that ends with a perfect authentic cadence; song are based on client-familiar styles; rhythms provide consistent and steady beat in 4/4 meter that end on the fourth downbeat; tempo markings correspond to the client's current state of arousal and should be adjusted to provide enough time to practice accurate articulation of target sounds or phrases; dynamics should not be played or listened to over 80 decibels, but when singing, the SMT should emphasize certain parts of words that need to be stressed by slightly increasing the volume; introduce new timbres in a manner that are complementary to the timbre of the voice; and use basic accompaniment patterns.

Music and speech have many similar characteristics that make it easy to transfer communication patterns from music to speech. Music is used as a stimulus in speech mainly through melody and rhythm. The sequential patterns of ups and downs in a melody define its pitch contour, and a pitch contour with its temporal pattern. Melodic contour relates to the pitch pattern of the spoken phrases. Memory of a melody, based on perceptual organization of sequential structure, is very similar to learning to articulate a sequence of events (Lim, 2010, 2012). Tempo and dynamics also support engagement and learning through the emphasis of certain syllables, inflection patterns, and consistent speech fluency. Lyrics and style add an aesthetic effect as musical stimuli, while form structures the music as a whole.

References

Berger, D. S. (2002) Music therapy, sensory integration, and the autistic child. London: Jessica Kingsley Publishers.

Buckley, S. J. (2000). *Speech, language and communication for individuals with Down syndrome—An overview*. Down Syndrome Issues and Information. Down Syndrome Education Online. Retrieved from http://www.down-syndrome.org/information/language/overview/

Edgerton, C. L. (1994). The effect of improvisational music therapy on the communicative behaviors of autistic children. *Journal of Music Therapy*, *31*, 31–62.

Lim, H. A. (2010). The effect of "developmental speech-language training through music" on speech production in children with autism spectrum disorders. *Journal of Music Therapy*, *47*(1), 2–26.

Lim, H. A. (2012). *Developmental speech-language training through music for children with autism spectrum disorders: Theory and clinical application*. London: Jessica Kingsley.

Nordoff, P. (1983). Music therapy in special education. St. Louis: Magnamusic-Baton.

Patel, A. D. (2008). Music, language, and the brain. Oxford: Oxford University Press.

Pinkerton, J. (1996). The sound of healing: Create your own music program for better health. Brooklyn: Alliance Publishing.

Pryce, M. (1994). The voice of people with Down syndrome: An EMG biofeedback study. *Down Syndrome Research and Practice, 2*(3), 106–111.

Schneck, D. (2006). The music effect: Music physiology and clinical applications. London: Jessica Kingsley Publishers.

Thaut, M. H. (2005). *Rhythm, music, and the brain*. London: Taylor & Francis.

Thaut, M., Thaut, C., & LaGasse, B. (2008). Music therapy in neurologic rehabilitation. In W. B. Davis, K. E. Gfeller, & M. H. Thaut (Eds.), *An introduction to music therapy theory and practice* (3rd ed., pp. 261–304). Silver Spring, MD: American Music Therapy Association.

Wigram, T. (2000). A method of music therapy assessment for the diagnosis of autism and communication disorders in children. *Music Therapy Perspectives 18*, 13–18.

Appendix C

Therapeutic Function of Music Plan Example

Author's Note: This is an example of how the TFM Plan worksheet was completed by one graduate equivalency student who was in her sixth-semester clinical rotation. This example is included as an illustration of this process and should not be interpreted in any other way. The music elements were defined as a separate class assignment and are not included in the worksheet illustration to preserve space.

Problem Statement:

Rationale: Adolescent females are at a higher risk for depression as a result of hormonal development during this developmental period (Walsh, 2004). The risk of depression increases in adolescent females who are living in poverty or considered "at-risk" (Hessler & Katz, 2010; Lancot & Smith, 2001; Mendelson, Kubzansky, Datta, & Buka, 2008). Trauma, in this case lifelong poverty, causes distinct changes to brain structure as a result of a

constantly overactive amygdala. As a result of this, fear and anger are emotions that are closer to the surface and more likely to be inappropriately activated (Perry, 2004). Research shows that at-risk adolescent females' inability to express and process sadness is a large contributing factor to risk of depression (Hessler & Katz, 2010). Internalization of these emotions, such as sadness, again raises the risk not only of depression, but of other risk behaviors, such as the use of drugs, alcohol, and unsafe sexual behaviors (Hessler & Katz, 2010; Lancot & Smith, 2001; Mendelson, Kubzansky, Datta, & Buka, 2008; Smith, Buzi, & Weinman, 2010).

Unplanned pregnancy resulting from unsafe sexual behaviors can further increase depressive and internalizing symptoms, other risk behaviors, and continue the cycle of poverty and single-parent homes (Smith, Buzi, & Weinman, 2010). For adolescent populations in general, music plays an integral part in the culture and can be an effective tool for intervention. In looking at the above statement, a treatment goal of increased emotional expression would be essential in countering internalizing symptoms and decreasing risk of depression and high-risk behaviors.

Treatment Goal: Increase emotional expression

Musical Element	Theoretical Framework	Purpose of Musical Element	Explicit description of the musical element: songwriting
Melody	Melodies in preferred music (Rap, R&B, hip-hop) generally move stepwise and have a limited range. Mode of the melody plays an important role in the expression of emotion in music. Major modes tend to be culturally associated with positive emotions (happiness, love, excitement), and minor modes tend to be used to express sadness, fear, anger, etc. (Levitin, 2006). Adolescent females are at a higher risk for depression, and internalizing emotions, especially a lack of ability to express sadness, increases that risk (Hessler & Katz, 2010; Lancot & Smith, 2001; Mendelson, Kubzansky, Datta, & Buka, 2008; Walsh, 2004).	Melody must be stylistically appropriate to the preferred genre. Melody must be in a mode that reflects and supports the emotion expressed in the music.	Melody will generally move stepwise and cover a limited range. Melody will be in a minor mode to support the expression of sadness.
Pitch	A general comfortable range for the adolescent female voice is between middle C to an octave above.	Range of the melody must be in a relatively comfortable span for clients' ability.	Range of melody will be within or under 1 octave in a singable range; C4 (middle) to C5.
Rhythm	The human body/autonomic nervous system will entrain to rhythm (Ellis & Thayer, 2010). In order for higher-level cognition and brain function to occur, the brain stem must first be regulated (Perry & Hambrick, 2008). Rhythm is one of the more essential elements in the client-preferred genre of rap/R&B/hip-hop.	Rhythm must be strong and steady in order for the body to entrain and the brainstem to be regulated. Rhythm must be stylistically appropriate to the client-preferred genre.	Rhythm will have strong 1st and 3rd beats in order to regulate brainstem and be stylistically appropriate to the R&B genre.
Dynamics	Dynamics play an important role in the expression of emotion in music. In Western culture, louder dynamics are often associated with higher-energy emotions such as happiness, excitement, and anger. Softer dynamics are associated with emotions such as sadness and introspection, especially when coupled with a minor mode (Levitin, 2006). Adolescent females are at a higher risk for depression, and internalizing emotions, especially a lack of ability to express sadness, increases that risk (Hessler & Katz, 2010; Lancot & Smith, 2001; Mendelson, Kubzansky, Datta, & Buka, 2008; Walsh, 2004).	Dynamics must be increased or decreased in order to reflect and enhance the emotional tone of the music. Dynamics must be increased or decreased based on the desired level of arousal in clients.	Dynamics will generally be softer in order to support the expression of sadness and lower arousal level of clients.
Harmony	Common chord progressions in the client-preferred genres of rap/R&B/hip-hop are I-IV-V-I, i-iv-V-i, and I-vi-IV-V-I, as well as some other variations. Key and harmony play an integral role in the expression of emotion through music. Major modes tend to be culturally associated with positive emotions (happiness, love, excitement), and minor modes tend to be used to express sadness, fear, anger, etc. (Levitin, 2006). Our bodies elicit an emotional response when our expectations of the movement of the harmony in the music are disrupted or not fulfilled (Levitin, 2006; Meyer's Theory of Expectations class notes). Adolescent females are at a higher risk for depression, and internalizing emotions, especially a lack of ability to express sadness, increases that risk (Hessler & Katz, 2010; Lancot & Smith, 2001; Mendelson, Kubzansky, Datta, & Buka, 2008; Walsh, 2004).	Harmony used must reflect the style and genre of client-preferred music. Harmonic mode (major/minor) must be chosen based on the emotion expressed in the music, and the harmonic progression is disrupted (such as a deceptive cadence) when a strong emotional response is desired in the music.	Harmonic structure will be in a minor mode in order to support expression of sadness in the music and generally utilize the progression of i-iv-V-i as a framework.

Musical Element	Theoretical Framework	Purpose of Musical Element	Explicit description of the musical element: songwriting
Form	The most common form of the client-preferred genres of rap/R&B/hip-hop is chorus/hook-verse-hook-verse-bridge-hook, or some variation of that.	Use the form of the music to set a theme—the chorus/hook provides a framework for the context of the song and is constantly gone back to and emphasized between verses.	Chorus/hook will be written first in order to provide the theme and emotion of the music; in this case, expression of sadness. Chorus/hook-verse-hook-verse-bridge-hook
Tempo	Tempo plays an important role in the expression of emotion in music. In Western culture, faster tempi are often associated with higher-energy emotions such as happiness, excitement, and anger. Slower tempi are associated with emotions such as sadness and introspection (Levitin, 2006). The human heart beats between 60 and 80 bpm at a resting and regulated state. Tempo and music can be used to change arousal states of the autonomic nervous system (Ellis & Thayer, 2010). Adolescent females are at a higher risk for depression, and internalizing emotions, especially a lack of ability to express sadness, increases that risk (Hessler & Katz, 2010; Lancot & Smith, 2001; Mendelson, Kubzansky, Datta, & Buka, 2008; Walsh, 2004).	The tempo of the music must reflect and enhance the desired emotion expressed in the music. Modify tempo in order to increase or decrease desired arousal states in clients and regulate the brainstem.	Tempo will be within the range of a resting human heart rate (60–80 bpm) in order to decrease arousal, regulate the brainstem, and enhance the expression of sadness.
Timbre	Timbres play a major role in the client-preferred styles of rap/R&B/hip-hop. Many timbres of this style rely heavily on electronic synthesizers.	Utilize timbres in order to stylistically enhance the music and therefore increase release of dopamine and client pleasure. Timbres associated with client-preferred music are electronic drums, electronic strings, piano, and many other synthesized electronic beats.	Timbres used will be electronic strings, electronic drums, and electronic piano, as well as any other timbres added to enhance the musical end-product.
Style	With this particular population, selection of musical style informs the theoretical framework for almost all of the other characteristics of music. Preferred music elicits a pleasure response in the brain, which triggers the release of dopamine, a neurotransmitter associated with the body's pleasure response (Salimpoor, Benevoy, Larcher, Dagher, & Zatorre, 2011). The release of dopamine further enhances pleasure, which in turn raises the client's level of comfort and motivation in the therapeutic setting. This is essential to the client being able to freely express themselves and their emotions within the context of the therapeutic setting.	Style and genre of client-preferred music are rap/hip-hop/R&B. Utilize client-preferred music in order to increase dopamine release and support free expression of emotions.	Song will be in the style of R&B.
Lyrics	Lyrics are the most concrete form of emotional expression within a given piece of music. Adolescent females are at a higher risk for depression, and internalizing emotions, especially a lack of ability to express sadness, increases that risk (Hessler & Katz, 2010; Lancot & Smith, 2001; Mendelson, Kubzansky, Datta, & Buka, 2008; Walsh, 2004).	The musical elements are structured around the emotional context of the lyrics to further enhance the desired message and associated feelings/mood.	Lyrics will be written by the clients in order to express personal feelings of sadness over events and situations. The lyrics in the chorus will provide a framework for the thematic material of the song. Lyrics will be structured by the music therapist in order to give a musically pleasing end-product.
Texture	A typically developing adolescent's ability to process texture in music is relatively complete.	Utilize texture to add interest to the final product.	Texture will be added at the end in order to give an aesthetically pleasing end-product.

TFM Plan developed by Rebekah Stewart at the University of Missouri-Kansas City, 2011 (used with permission).

Theory-based Synthesis of the Music:

Intentional songwriting intervention is the technique selected to facilitate attainment of the goal. The therapist will compose a hook containing the theme of the song to facilitate and support the expression of thematic material (i.e., sadness). The structure of the song will primarily be stepwise melodic contour within the range of C4 to C5; 4/4 time signature with strong beats on 1st and 3rd beats per measure with a tempo marking of 60–100 bpm; minor mode with a harmonic progression of i-iv-V-I; R&B/hip-hop following the chorus/hook-verse-hook-verse-bridge-hook form; use of electronic strings, drums, and piano or similar timbre; other song components will be based on client-derived lyrics; lyrics may be restructured by the therapist if needed to facilitate a musically pleasing hip-hop form; other texture added as necessary.

As an introduction to the intervention, the therapist will teach clients the hook. The use of the preferred genre in the song composition will trigger the release of dopamine and help clients feel more at ease before their part in the songwriting process begins. The rhythm and tempo will regulate the brainstem in order to then allow for higher-level cognitive processes. Once the hook is learned, the therapist will ask clients to think of and write down a past situation where they felt sadness and did not express it, or expressed it as anger. Once clients have identified a situation, the therapist will explain that they are going to use those situations and write verses to the song with them. However, the verses are intended to express the sadness felt in that situation that they were not able to previously express. Theoretically, this technique uses ideas from Gestalt Therapy, which emphasizes bringing past feelings into the "here and now" in order to successfully process them. The therapeutic process will involve discussion of the healthy expression of sadness as clients and therapist work to write the verses. The elements of music are structured to support this process.

References

Ellis, R., & Thayer, J. (2010). Music and autonomic nervous system (dys)function. *Music Perception, 27*, 317–326.

Hessler, D., & Katz, L. (2010). Brief report: Associations between emotional competence and adolescent risky behavior. *Journal of Adolescence, 33*, 241–246.

Lancot, N., & Smith, C. (2001). Sexual activity, pregnancy, and deviance in a representative urban sample of African American girls. *Journal of Youth and Adolescence, 30*, 349–372.

Levitin, D. (2006). *This is your brain on music: The science of a human obsession*. New York: Penguin Group.

Mendelson, T., Kubzansky, L., Datta, G., and Buka, S. (2008). Relation of female gender and low socioeconomic status to internalizing symptoms among adolescents: A case of double jeopardy? *Social Science and Medicine, 66*, 1284–1296.

Perry, B. (2004). *Maltreated Children: Experience, Brain Development, and the Next Generation*. New York: W. W. Norton.

Perry, B., & Hambrick, E. (2008). The neurosequential model of therapeutics. *Reclaiming Children and Youth, 17*, 38–43.

Salimpoor, V., Benevoy, M., Larcher, K., Dagher, A., and Zatorre, R. (2011). Anatomically distinct dopamine release during anticipation and experience of peak emotion to music. *Nature Neuroscience, 14*, 257–264.

Smith, P., Buzi, R., & Weinman, M. (2010). Mental health screening in family-planning clinics: A sexual risk-reduction opportunity. *Journal of Sex & Marital Therapy, 36*, 181–192.

Walsh, D. (2004). *Why do they act that way? A survival guide to the adolescent brain for you and your teen*. New York: Free Press.