Evidence-Based Practice in Early Childhood Music Therapy: A Decision-Making Process

PETRA KERN University of North Carolina, Chapel Hill

ABSTRACT: The term "evidence-based practice" is now widely used in health care, education, and other fields. Yet there is no final consensus on its definition and application in the field of music therapy. Evidence-based practice allows practitioners to identify the best available interventions, strategies, and support for clients and bridges the gap between clinical practice and research. This article addresses the rationale for being an evidence-based practitioner, defines evidence-based practice, and proposes standards in related fields for consideration in early childhood music therapy. A five-step evidence-based practice decision-making process as proposed by the early childhood field in the USA is introduced, and ways it can be applied to a music therapy sample case scenario related to autism spectrum disorder. Knowledge, experiences, and values applicable to the decision-making process as well as finding sources for the best available research evidence and day-to-day applications for music therapists are discussed. Future directions and recommendation for the music therapy profession are presented.

As the choices for health care and intervention options increase and funding becomes more limited, practitioners working with young children with disabilities and their families need to decide which intervention options are most effective and compatible with clients' characteristics, culture, preferences, and circumstances (Buysse & Wesley, 2006). Vast quantities of literature and information of varied quality can make it challenging for music therapists, other health care professionals, and parents to identify the most suitable treatment option. To find the best available services and supports, music therapists need to ask themselves the following fundamental questions: "What works? Why does it work? For whom does it work? What might make it work even better? What else works?" (Mesibov & Shea, 2007, p. 13–14).

Music therapists can learn from the field of medicine and early childhood education by looking into the definitions and criteria for treatments considered evidence-based practice (EBP) for the population they serve. The field of music therapy has not yet reached a consensus regarding a definition for EBP. Furthermore, quality indicators for best available research evidence and levels of EBP have not been established (AMTA, June 2007). Nonetheless, Strain and Dunlap (n.d) point out that being an evidence-based practitioner is desirable, as it

- *maximizes beneficial outcomes for children and families* by offering the best available intervention options,
- *responds to the accountability demands* by providing data on one's position and practice,
- *expands one's own skills and competencies* by staying current on latest developments and trends in the field,
- *enhances political and financial support* from various stakeholders (i.e., administrators, policy makers, and funders) by providing evidence on the effectiveness of specific interventions, and
- *provides consumers with a rationale for the service* by making sound recommendations on effective practice.

Defining Evidence-Based Practice

To understand EBP, one needs to initially look into evidence-based medicine (EBM). Evidence-based practice originated in medicine and emerged as a result of the gap often seen between research and practice. Health care professionals using evidence-based medicine agree on a patient's diagnosis, prognosis, treatment, or ways of preventing illness based on three different paths of knowledge: (1) evaluation of the best research evidence, (2) clinical expertise, and (3) patients' values (Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000).

Currently each professional field defines EBP somewhat differently. For example, the field of psychology has defined EBP as "(...) integration of the best available research and clinical experience with the context of patient characteristics, culture, values, and preferences" (American Psychological Association, 2006, p. 273). The definition proposed by the early childhood field is "(...) a decision-making process that integrates the best available research evidence with family and professional wisdom and values" (Buysse & Wesley, 2006, p. 12). The preliminary definition drafted by the American Music Therapy Association reads "(...) the confluence of evidence from research as well as a) patient (client or student) preferences and needs, and b) clinician expertise and experience" (AMTA, June 2007, p. 1).

Most professions have defined EBP as a process of finding the best available services and supports for the individual patient/client by acknowledging the three different paths of knowing presented in Figure 1. The integration of these three components in the decision-making process creates evidence-based practice. However, a major discrepancy can be found in the criteria for "best available research evidence."

Petra Kern, MT-DMtG, MTA, NICU-MT, MT-BC, is a clinician, researcher, and educator in music therapy. Dr. Kern is a visiting scholar at the Frank Porter Graham Child Development Institute at the University of North Carolina at Chapel Hill. She is also owner of Music Therapy Consulting based in California.

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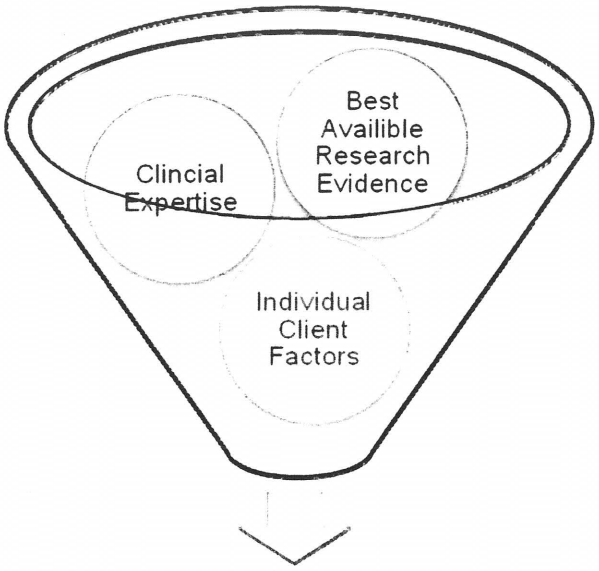

Figure 1. Three Different Components Defining EBP.

Identifying the Best Available Research Evidence

Consumers often use the term EBP as a synonym for best available research evidence, empirically supported treatments, or scientifically valued practice (Snyder, 2006). However, as described, research evidence is only one of the three components defining the evidence-based decision-making process. Most professionals working with young children and their families would agree that practice should be supported by scientific evidence (Buysse & Wesley, 2006). The question is, what qualifies as research evidence and how is it appraised within the context of EBP (Snyder, 2006)?

The No Child Left Behind Act of 2001 uses the term *scientifically based research*, which is defined as "research that involves the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to education activities and programs" (No Child Left Behind Act of 2001, Title IX, SEC. 9101, 37 A). Table 1 lists the details of *scientifically based research* standards as defined under Title IX, SEC. 9101, 37 B in the No Child Left Behind Act of 2001.

Several professional organizations and groups have argued that this federal U.S. law promotes randomized controlled trials (i.e., a group experimental design in which study participants are randomly assigned to either a treatment or control group) as the strongest evidence in supporting effective practice in education (Snyder, 2006). Although the early childhood field have recognized the importance of the proposed core scientific principles, applying them to research with young children and their families seems to be more complex (Buysse & Wesley, 2006). Thus, there is an agreement among educational researchers that different research questions require different research designs (Odom, Brantlinger, Gersten, Horner, Thompson, & Harris, 2005). Many professional groups representing social scientists have recognized the value of using varied research methodologies to address research questions.

Table 1

Scientifically Based Research Standards as Defined in the No Child Left Behind Act of 2001[1]

The term scientifically based research includes research that
(i) employs systematic, empirical methods that draw on observation or experiment;
(ii) involves rigorous data analyses that are adequate to test the stated hypotheses and justify the general conclusions drawn;
(iii) relies on measurements or observational methods that provide reliable and valid data across evaluators and observers, across multiple measurements and observations, and across studies by the same or different investigators;
(iv) is evaluated using experimental or quasi-experimental designs in which individuals, entities, programs, or activities are assigned to different conditions and with appropriate controls to evaluate the effects of the condition of interest, with a preference for random-assignment experiments, or other designs to the extent that those designs contain within-condition or across-condition controls;
(v) ensures that experimental studies are presented in sufficient detail and clarity to allow for replication or, at a minimum, offer the opportunity to build systematically on their findings; and
(vi) has been accepted by a peer-reviewed journal or approved by a panel of independent experts through a comparably rigorous, objective, and scientific review.

[1] From the No Child Left Behind Act 2001 (Title IX, SEC. 9101, 37 B). Available at http://www.ed.gov/policy/elsec/leg/esea02/pg107.html#sec9101

This has led to the establishment of quality indicators for evaluating rigorous application of each methodology as well as criteria for different levels of EBP (Council for Exceptional Children, 2006; Odom et al., 2005).

Quality indicators typically describe the core design features of a specific research design and sometimes evaluate the degree to which each core feature is met (Snyder, 2006). For example, Reichow, Volkmar, and Cicchetti (2008) have identified rubrics and guidelines for evaluating research that reports rigor and strength for young children with autism. When evaluating single-case experimental designs, proposed primary quality indicators include a specific description of a) participants' characteristics, b) independent variables, c) dependent variables, d) baseline condition, e) visual analysis, and f) experimental controls. Secondary quality indicators include a) interobserver agreement, b) kappa, c) fidelity, d) blind raters, e) generalization and/or maintenance, and f) social validity. The strength of the research report is then rated by the authors as *strong* (i.e., high quality ratings on all primary quality indicators and 3 or more secondary quality indicators), *adequate* (i.e., high quality ratings on 4 or more primary quality indicators with no unacceptable quality ratings on any primary quality indicators and at least 2 secondary quality indicators), or *weak* (i.e., less than 4 high quality ratings on primary quality indicators or less than 2 secondary quality indicators).

Levels of EBP rank the strength and level of evidence available to support the effectiveness of a particular practice, strategy, or intervention (Snyder, 2006). Table 2 shows two examples defining different levels of EBP: one proposed by

Table 2

Two Examples for Levels of EBP[1]

Level of EBP	Criteria: Autism Reichow et al. 2008	Criteria: Early Childhood CEC, 2006
Established EBP (Autism) Research Based Practice (Early Childhood)	At least five single subject studies of strong research report strength meeting the following criteria Conducted by at least three different research teams Conducted in at least three different locations Total sample size at least 15 different participants across studies At least 10 single subject studies of at least adequate research report strength meeting the following criteria Conducted by at least three different research teams Conducted in at least three different locations Total sample size of at least 30 different participants across studies At least two group experimental design studies of strong research report strength conducted in separate laboratories by separate research teams At least four group experimental designs studies of at least adequate research report strength conducted in at least two different laboratories by separate research teams One group experimental design study of strong research strength and three single subject studies of strong research report strength Two group experimental design studies of at least adequate research report strength and three single subject studies of strong research report strength One group experimental design study of strong research report strength and six single subject studies of at least adequate research report strength Two group experimental design studies of at least adequate research report strength and six single subject studies of at least adequate research report strength	Experimental and quasi-experimental—At least four acceptable quality studies or two high quality studies that support the practice, and that indicate a significant effect of the practice at a .05 level. OR Single subject—a minimum of five single subject studies that meet acceptable criteria and document experimental control; studies conducted by at least three different researchers across at least three different locations; studies include a total of at least 20 different participants.
Promising Practice (Autism and Early Childhood)	At least three single subject studies of at least adequate reach report strength meeting the following criteria Conducted by at least two different research teams Conducted in at least two different locations Total samples size of at least 9 different participants across studies At least two group experimental design studies of at least adequate research report strength (can be conducted by the same research team the same location)	Experimental/quasi experimental—At least four acceptable quality studies or two high quality studies that support the practice, and the data indicate a 20% confidence level for the effect size. OR Single subject—At least five single subject studies meeting acceptable criteria by at least three different researchers across different geographical locations.
Emerging Practice (Early Childhood)	Not applicable	Correlational—Well designed studies with effects that are clearly significant; most informative when exemplary practices are followed regarding measurement, quantifying effects, avoiding common analysis errors, and using confidence intervals to portray the range of possible effects and the precision of the effect estimates. OR Qualitative Studies—Provide evidence for specific contexts and particular individuals; quality studies must have clear descriptions of methods used and relate to the research questions and conceptual frameworks of the type of study.

[1] Information in column 1 is from Reichow, B., Volkmar, F. R., & Cicchetti, D. V. (2008). Development of the Evaluative Method for Evaluating and Determining Evidence-Based Practice in Autism. *Journal of Autism and Developmental Disorder, 38*, p. 13. Information in column 2 is from CEC Evidence-Based Professional Practice Proposal (Spring 2006) by the Profession Standards and Practice Committee. Arlington, VA: Council for Exceptional Children, p. 5. Available at http://www.cec.sped.org/Content/NavigationMenu/ProfessionalDevelopment/ProfessionalStandards/EVP_revised_03_2006.pdf Reprinted with permission.

Table 3

Selected Organizations Providing Research Synthesis to Identify EPB

Organization	Brief Description & URL
What Works Clearinghouse Institute of Education Sciences, U.S. Department of Education	Identifies scientific evidence for interventions and practices in education, including early childhood education (curricula and practices related to cognitive and language competencies). Products: Search engine for interventions; *Create My Summary* feature; and intervention reports. www.w-w-c.org
Cochrane Collaboration	Offers systematic reviews on the effectiveness of medical and healthcare interventions. Products: Search engine for abstracts; selected podcast summaries for practitioners. www.cochrane.org
Campbell Collaboration	Offers systematic reviews of intervention studies related to social, behavioral, and educational topics. Products: Education group newsletter http://www.campbellcollaboration.org
Center on the Social and Emotional Foundations for Early Learning (CSEFEL)	Focuses on children's social-emotional development and school readiness. Products: *What Works Briefs* (four-page summaries of effective practices); training materials, videos, and chat sessions. http://www.vanderbilt.edu/csefel/
Research and Training Center on Early Childhood Development Olena Puckett Institute	Research synthesis focusing on intervention approaches or practices in the early childhood field. Products: *Centerscope* (RTC materials); *Bridges* (practice-centered research syntheses); *Bottomlines* (one-to-two page summaries of practice-based research syntheses), *Solution* Tool Kit (user-friendly RTC products focusing on early childhood practice) http://www.researchtopractice.info
Promising Practice Network	Summarizes research about programs and practices that are effective in improving outcomes for children, youth, and families. http://www.promisingpractices.net

Reichow et al. (2008) for treatment concerning young children with autism, and one disseminated for discussion by the Professional Standards and Practice Committee of the Council for Exceptional Children (2006).

According to the CEC (2006), Research-Based Practice is recommended, Promising Practice may be applied but the developing literature needs to be closely monitored, and Emerging Practice should be used with caution as there is not yet sufficient research to support generalization.

According to the CEC (2006), *Research-Based Practice* is recommended, *Promising Practice* may be applied but the developing literature needs to be closely monitored, and *Emerging Practice* should be used with caution as there is not yet sufficient research to support generalization. Reichow et al. (2008) have similar suggestions for *Established EBP* and *Promising Practice*.

These levels of evidence appraisals are rather complex, however, there are information systems providing easy access to a systematic review of effective practice (Snyder, 2006). The websites displayed in Table 3 have been created by several entities to assist consumers in finding interventions, strategies, and practices that are appraised as being evidence-based.

Clinical Expertise and Client Factors

Although proposed definitions of EBP acknowledge clinical expertise, experiences, and judgment as well as client factors such as individual preference, values and beliefs in the decision-making process, the literature mostly focuses on identifying the best available research evidence to inform practice decisions. However, deciding how to weigh the three components and make a judgment to provide immediate answers to clinical questions remains a day-to-day challenge for music therapy practitioners (Buysse, Wesley, Snyder, & Winton, 2006).

Only a few professional groups addressed how clinical expertise and clients' beliefs and values influence the process of finding the best available treatment options for young children and their families. For instance, Buysse and Wesley

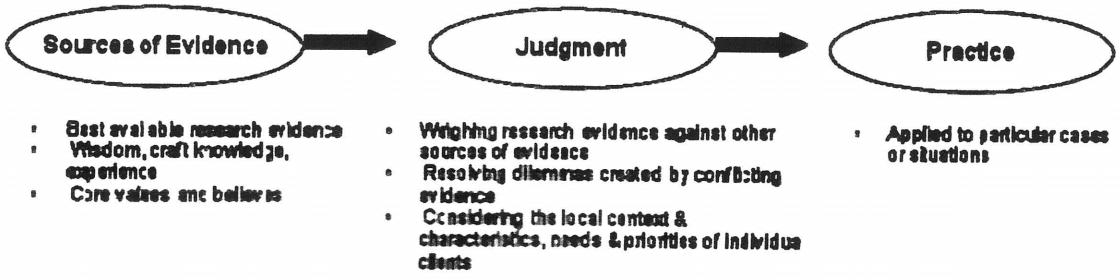

Figure 2. A Proposed Model for Applying Evidence to Inform Practice Decisions.

Table 4

Building a Clinical Question to Find Evidence[1]

	1	2	3	4
PICO	**P**atient (client, population or problem)	**I**ntervention (assessment, strategy, technique, support)	**C**omparison intervention (if applicable)	**O**utcomes (may include specific outcome measures)
Example	In children with autism will a song intervention result in increased peer interaction on the playground?			

[1] Adapted from *Asking Focused Questions*. Center for Evidence-Based Medicine. University of Oxford, April 7, 2009. Available at http://www.cebm.net/index.aspx?o=1036

Table 5

Identifying Search Terms Related to the PICO Question[1]

	1	2	3	4
PICO	**P**atient	**I**ntervention	**C**omparison Intervention	**O**utcomes
Possible search terms	young children, special needs, autism	music therapy, song intervention, playground intervention	not applicable	increased peer interaction

[1] Adapted from *Finding the Evidence*. Center for Evidence-Based Medicine. University of Oxford, April 7, 2009. http://www.cebm.net/index.aspx?o=1900

(2006) proposed the conceptual framework presented in Figure 2 to make informed practice decisions in early childhood. Although the early childhood field still seeks answers to open questions, music therapy practitioners working with young children and their families may consider adapting this concept to their daily work.

Applying Evidence-Based Practice in Day-to-Day Work

The EBP movement has empowered practitioners to make more informed practice decisions that directly benefit their clients. According to Buysse and Wesley (2006) "(...) evidence-based practice represents a democratizing of knowledge in which knowledge is transparent and accessible to all, thus requiring that practitioners identify, evaluate, and interpret the evidence and apply it to solve practice problems" (p. xiv). The question is, how can EBP be implemented in the daily work of a music therapist?

Buysse and Wesley (2006) recommend a five-step decision-making process based on the medical model, which may be especially useful for music therapist working with young children and their families. This decision-making process includes the following steps: (1) pose the question, (2) find the best available research evidence, (3) appraise the evidence quality and relevance, (4) integrate research with value and wisdom, and (5) evaluate. The following clinical scenario will illustrate the implementation of the five-step decision-making process in early childhood music therapy, supplemented by strategies suggested by the field of medicine. While this example is specific to the early childhood setting, implications may also extend to other populations with whom music therapists work.

Sample Clinical Scenario

er children and make friends. Both his parents like music and noticed that Carson responds well to singing during daily routines at their home. Looking for possible treatment options that could be beneficial for Carson, they asked the preschool's music therapist if a song intervention might help Carson learn to interact with his classmates on the playground. Together with the interdisciplinary team, the music therapist evaluated possible playground interventions for Carson that used songs to support his interaction and learning. To find the most beneficial outcome for him and advise Carson's parents accordingly, the team considered the five-step decision-making process based on EBM and proposed by the early childhood field.

Step 1: Pose the Question

The first step in finding the best evidence is to develop a concrete clinical question that is relevant to the client's dilemma and allows searching for precise answers. The Center for Evidence Based Medicine (2009a) suggests considering the PICO model to formulate clinical questions. A question structured using the PICO format contains four elements: Patient, Intervention, Comparison, and Outcome. Table 4 outlines the clinical question designed for the sample case scenario.

Step 2: Find the Best Available Evidence

The next step is to search for evidence. Locating the best available research evidence from the literature is an essential part of the decision-making process. However, it can be challenging for the busy practitioner to decide which of the many resources of varied merit and value will provide an immediate answer to the clinical question. The Center for Evidence Based Medicine (2009b) suggests the following search strategy (a) identify terms reflecting the PICO question, (b) look for secondary sources, and (c) search for primary sources. Secondary sources include national guidelines (see public policies), evidence-based summaries (see products in Table 3), and systematic reviews (see organizations in Table 3). Primary sources include original research articles, which can be found in databases such as ERIC and PubMed. If available information is limited, it can be supplemented with textbooks, workbooks, fact sheets, consensus papers, case descriptions, websites, consultation with experts, or continuing education. Table 5 and 6 show the application of the search strategy to the sample case scenario.

Step 3: Appraise the evidence quality and relevance

The third step involves the appraisal of the evidence quality and relevance. Finding the best available evidence to answer the clinical question requires critical reflection of "the source of information, the review process that shaped the information, and the methodologies used to generate the information"

Table 6
Sample Search Results

Article	Source	Type
Gold C., Wigram T., Elefant C. Music therapy for autistic spectrum disorder. *Cochrane Database of Systematic Reviews* 2006, Issue 2. Art. No.: CD004381. DOI: 10.1002/14651858.CD004381.pub2.	Cochrane Collaboration	Systematic Review
Whipple, J. (2004). Music in intervention for children and adolescents with autism: A meta-analysis. *Journal of Music Therapy, 41(2),* 90–106.	PubMed; ERIC	Meta-Analysis
Kern, P., & Aldridge, D. (2006). Using embedded music therapy interventions to support outdoor play of young children with autism in an inclusive community-based child care program. *Journal of Music Therapy, 43(4), 270–294.*	PubMed; ERIC	Single Case Experimental Design
Kern, P., Wolery, M., & Aldridge, D. (2007). Use of songs to promote independence in morning greeting routines for young children with autism. *Journal of Autism and Developmental Disorders, 37(7),* 1264–1271.	PubMed; ERIC	Single Case Experimental Design
Nabors, L., Willoughby, J., Leff, S., & McMenamin, S. (2001). Promoting inclusion for young children with special needs on playgrounds. *Journal of Developmental and Physical Disabilities, 13(2),* 179–190.	ERIC	Literature Review

(Winton, Buysse, & Zimmerman, 2007, p. 15). Additionally, specific levels of evidence and quality indicators established by professional groups should be considered (e.g., Council of Exceptional Children, 2006; Reichow et al., 2008). Table 7 reflects the appraisal of the sample search results for the clinical scenario.

According to the Council of Exceptional Children (2006) criteria for level of evidence, the sample clinical scenario would probably fall under *Emerging Practice,* and music therapy for individuals on the autism spectrum would in general most likely fall under *Promising Practice*. This is not a reason to question the value of music therapy for enhancing the lives of young children with autism and their families, but it does mean that the profession needs to continue to generate more scientific data to increase the level of evidence of music therapy interventions for individuals on the autism spectrum. The results of research (Gold, Wigram, & Elefant, 2006; Whipple, 2004) and more recent scientific literature indicate that there is an emerging body of evidence supporting music therapy's effectiveness as an intervention for this population.

Step 4: Integrate Research with Values and Wisdom

The fourth step is to integrate the scientific knowledge with professional and family wisdom and values. Weighing the research evidence against (a) professional expertise and experiences, (b) family values, beliefs and priorities, and (c) local and contextual factors, and client characteristics and preferences is the most complex part of the decision-making process (Buysse, Wesley, Snyder, & Winton, 2006). Winton, Buysse, and Zimmerman (2007) pointed out that there might be a conflict if the research evidence does not support the professional and family wisdom and values. In this case, each source of evidence needs to be carefully considered and weighed against the other. Ultimately, the final decision for the client's best intervention option relies on the practitioner's judgment and ability to think critically. In addition to the best

Table 7
Appraisal of Sample Search Results

Article	Quality	Relevance
Gold C., Wigram T., Elefant C. (2006)	Cochrane reviews are pre-appraised compendia and therefore considered a reliable source of information	Similar target group (broader age range); song interventions; effective intervention outcomes related to verbal and gestural communication; no peer interaction and playground outcomes available
Whipple, J. (2004)	Peer-reviewed article; strong research methodology; high standards for inclusion and exclusion criteria	Similar target group (broader age range); related interventions; increased communicative acts and engagement with others noted; no playground outcomes available
Kern, P., & Aldridge, D. (2006)	Peer-reviewed article; recognized research methodology; all primary quality indicators, and three secondary quality indicators available	Matches target group; song intervention; positive outcomes for increasing peer interaction on a playground recorded for all study participants (n = 4)
Kern, P., Wolery, M., & Aldridge, D. (2007)	Peer-reviewed article; recognized research methodology; all primary quality indicators, and three secondary quality indicators available	Matches target group; song intervention; some positive peer interaction recorded; no playground outcomes available
Nabors, L., Willoughby, J., Leff, S., & McMenamin, S. (2001)	Peer-reviewed article; recommended practice based on scientific and experimental knowledge to enhance outdoor play and inclusion of children with disabilities	Similar target group (variety of disabilities); variety of playground interventions; recommended practice to improve social and cooperative play

Table 8

Weighing Other Sources of Knowledge

Other Sources of Knowledge	Case Scenario
Clinical expertise and experiences	Songs are a common intervention technique utilized by music therapists; children with autism often demonstrate a high interest and strength in music; music therapy interventions can be embedded in the natural environment such as the playground; all children like to sing and make music.
Family values, beliefs and priorities	Music is a valued part of the family's life; parents observed Carson's positive response to music in the home environment; parents requested music therapy services.
Local contextual factors; child's interest, strengths, and needs	Music therapy services are offered at Carson's preschool setting and can be written into his Individual Education Plan; Carson responds positively to music during other daily situations; Carson demonstrates high musical skills; using a song intervention that includes peers meets his need to improve social interactions and make friends.

Judgment: Although there is limited research evidence to support the effectiveness of song interventions for improving peer interactions for young children with autism on the playground, the interdisciplinary team recommends music therapy services for 3 months as it is the family's preferred intervention, taps into Carson's interests and strengths, and has been supported by recommend practice within the music therapy and related fields.

research evidence, Table 8 displays possible weighing of the other two proposed path of knowledge for the case scenario.

Step 5: Evaluate

The final step is to evaluate the effectiveness of steps 1–4 and make recommendations for future improvements. If the available evidence cannot answer the clinical question, practitioners may consider contacting a researcher for collaboration in investigating the question (Strain & Dunlap, n.d.). The gap between research and practice can be filled only if practitioners and researchers collaborate, eventually finding the best available treatment option for clients. Table 9 presents the evaluation of the intervention for the sample case scenario.

Future Considerations for EBP in Early Childhood Music Therapy

Given the recent discussions related to standards of EBP and other accountability measures, it is imperative that the music therapy profession seeks answers to the following questions:

How can we reach agreement on what EBP means in music therapy and align ourselves with public policies and other fields?

The music therapy profession needs to reach consensus on the definition of EBP, the quality indicators for evaluating evidence, and different levels of EBP.

The music therapy profession needs to reach consensus on the definition of EBP, the quality indicators for evaluating evidence, and different levels of EBP. Music therapists work with a wide range of populations and age groups. It remains unclear if there can be one model that can be developed for application in music therapy or if EBP should be aligned with the models, standards, and guidelines proposed by professional organizations related to the particular population one serves (e.g., Buysse & Wesley, 2006; Council of Exceptional Children, 2006). In the spirit of global music therapy, we need also to decide if the field can come to a worldwide consensus or if it the meaning of EBP is bound by public policies, cultural values, and belief systems of each nation.

How can we make the knowledge gained via music therapy available, transparent, and user-friendly so practitioners might make informed daily practice decisions?

Researchers need to continue building the knowledge base to create more research synthesis, including a greater number of rigorous studies, which then need to be disseminated widely and in different formats (e.g., research summaries and applications for day-to-day practice dilemmas, fact sheets, and websites devoted to EBP in music therapy). Echoing some of Buysse and Wesley's (2006) ideas, the author believes that the information system should include an appraisal mechanism and point out the best available research evidence for specific music therapy intervention strategies and support related to the population served. Additionally, the knowledge should be distributed by offering a variety of professional develop-

Table 9

Evaluating the Intervention

Has the song intervention increased Carson's peer interaction on the playground?
Case Scenario: Over the past 3 months, the music therapist collected clinical data on Carson's progress on the playground. During an interdisciplinary team meeting, which included the parents, she reports that the song intervention resulted in an immediate increase in Carson's peer interactions on the playground. Carson was engaged in singing, and his peers also wanted to be part of the song intervention. In addition, the music therapist noted that Carson's communication and imitation skills, his awareness and interest in peers, and his play activities all improved. Additionally, Carson expressed joy and happiness by smiling and jumping up and down.
Therefore, the music therapist suggests continuing music therapy services for Carson to support related Individual Education Plan goals and considers contacting a research colleague at the local university to discuss potential studies supporting her clinical observations.

ment opportunities (e.g., ongoing education, workshops, presentations, podcasts, and websites).

How can practitioners and researchers collaborate to improve the lives of young children and their families?

In order to bridge the gap between research and practice, practitioners and researchers must work together more closely. Partnerships may help answer the most prominent questions arising in daily practice and identify areas of practice for which sufficient evidence is lacking (Buysse & Wesley, 2006). Furthermore, the wisdom and values of practitioners and families may inspire research endeavors that transform beliefs and experiences gathered by observation and reflection into effective methods that improve the lives of young children and their families.

What is expected from evidence-based music therapy practitioners?

According to Strain and Dunlap (n.d.), practitioners should be aware of the latest research, trends, practice standards, and policies and remain open to new ideas. Interventions should be supported by peer-reviewed data that support effectiveness with specific client populations. Additionally, practitioners should employ ongoing data collection systems that track children's progress and provide families with support, information, and hands-on training.

What should be included in music therapy training programs?

Educators need to find strategies for preparing students to search for evidence, appraise research, and become critical thinkers. Policy makers look for the effectiveness of interventions; thus, developing and learning strategies for communicating the benefits of music therapy are essential skills for obtaining funding for services and research projects. Students need to understand the impact of public policies on clinical practice and music therapy service delivery in order to become vigorous advocates for their clients and the profession itself.

Conclusion

The EBP movement has affected music therapy practice as well as the early childhood field in general. Music therapy practitioners, researchers, and educators working with young children must reflect on how specific aspects of EBP relate to their work. Practitioners need to familiarize themselves with the decision-making process to provide families with sufficient information about the best available treatment option for their children. Researchers should collaborate with practitioners to find answers to the most relevant clinical questions, apply rigorous research standards, and disseminate systematic knowledge in multiple ways. Educators will need to find strategies to educate students to critically reflect on and appraise the research evidence and become familiar with public policies influencing music therapy services. Hence, the effects of EBP are far-reaching. By embracing collaboration as we move forward in our early childhood music therapy research, we may find collective answers to the remaining questions pertaining to EBP.

REFERENCES

American Psychological Association (2006). Evidence-based practice in psychology. *American Psychologist, 61*, 271–285.

AMTA (June, 2007). *Fact Sheet: Music Therapy and Evidence Based Practice (Draft)*. Silver Spring, MD: Author.

Buysse, V., & Wesley, P. W. (2006). *Evidence-based practice in the early childhood field*. Washington, D.C.: ZERO TO THREE.

Buysse, V., Wesley, P. W., Snyder, P., & Winton, P. (2006). Evidence-based practice: What does it really mean for the early childhood field? *Young Exceptional Children, 9*(4), 2–11.

Center for Evidence Based Medicine (2009a). *Asking focused questions*. University of Oxford. Retrieved April 7, 2009 from http://www.cebm.net/index.aspx?o=1036.

Center for Evidence Based Medicine (2009b). *Finding the evidence*. University of Oxford. Retrieved April 7, 2009 from http://www.cebm.net/index.aspx?o=1900.

Council of Exceptional Children (2006). *CEC Evidence-Based Professional Practice Proposal*. Arlington, VA: Professional Standards and Practice Committee.

Gold C., Wigram T., & Elefant C. (2006). Music therapy for autistic spectrum disorder. *Cochrane Database of Systematic Reviews* 2006, Issue 2. Art. No.: CD004381. DOI: 10.1002/14651858.CD004381.pub2.

Kern, P., & Aldridge, D. (2006). Using embedded music therapy interventions to support outdoor play of young children with autism in an inclusive community-based child care program. *Journal of Music Therapy, 43*(4), 270–294.

Kern, P., Wolery, M., & Aldridge, D. (2007). Use of songs to promote independence in morning greeting routines for young children with autism. *Journal of Autism and Developmental Disorders, 37*(7), 1264–1271.

Mesibov, G. B., & Shea, V. (2007). *Evidence-based practice, autism, and the TEACCH Program*. Manuscript submitted for publication.

Nabors, L., Willoughby, J., Leff, S., & McMenamin, S. (2001). Promoting inclusion for young children with special needs on playgrounds. *Journal of Developmental and Physical Disabilities, 13*(2), 179–190.

No Child Left Behind Act of 2001, Title IX, SEC. 9101, 37 B. Retrieved April 21, 2009 from http://www.ed.gov/policy/elsec/leg/esea02/pg107.html#sec9101.

Odom, S. L., Brantliner, E., Gersten, R., Horner, R. H., Thompson, B., & Harris, K. R. (2005). Research in Special Education: Scientific Methods and Evidence-Based Practice. *Exceptional Children, 71*(2), 137–48.

Reichow, B., Volkmar, F. R., & Ciccetti, D. V. (2008). Development of the evaluation method for evaluating and determining evidence-based practice in autism. *Journal of Developmental Disorder, 38*, 1311–1319.

Sackett, D. L., Straus, S. E., Richardson, W. S., Rosenberg, W., & Haynes, R. B. (2000). *Evidence based medicine: How to practice and teach EBM, (2nd ed.)*. London: Churchill Livingstone.

Snyder, P. (2006). Evidence-based research evidence: Impact on research in early childhood. In V. Buysse, V., & P. W. Wesley (Eds.), *Evidence-based practice in the early childhood field*, (pp. 35–70). Washington, D.C.: ZERO TO THREE.

Strain P. S., & Dunlap, G. (n.d.). *Recommended Practices: Being an Evidence-Based Practitioner*. Center for evidence-based practice. Retrieved April 7, 2009, from http://www.challengingbehavior.org/do/resources/tacsei_resources_all.htm.

Winton, P., Buysse V., & Zimmerman, T. (2007). Infusing evidence-based practice into professional development. *Early Developments 11*(1), 11–17.

Whipple, J. (2004). Music in intervention for children and adolescents with autism: A meta-analysis. *Journal of Music Therapy, 41*(2), 90–106.

Note: An erratum of missing parts will be published by the MTP editor in a future issue.