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Challenges in Building Healthcare and Medical Taxonomies

Case Study: Music and Health Institute at Berklee College of Music

Brandy King, Heather Hedden, Christine Karpeles

SLA Annual Conference
October 2020

About the Presenters

Brandy King

Independent Information Professional, Knowledge Linking

- 17 years in health science research, recent focus on arts/humanities
- Designed several other databases for interdisciplinary research

Heather Hedden

Taxonomy Consultant, Hedden Information Management

- Taxonomy online course instructor
- Author of *The Accidental Taxonomist, 2nd ed.*

Christine Karpeles

Metadata Specialist, Karpeles Information Services

- Indexer and taxonomist
- Remote worker/independent contractor

Session Outline

- Project introduction
- Taxonomy challenges:
  - Taxonomy design for diverse users
  - User interface limitations
  - Taxonomy integration challenges
- Taxonomy use in indexing

Project Introduction: Music & Health Research Collection

Quincy Jones

John Mayer

Charlie Puth

Diana Krall

Juliana Hatfield

Meghan Trainor

Paula Cole

Juan Luis Guerra

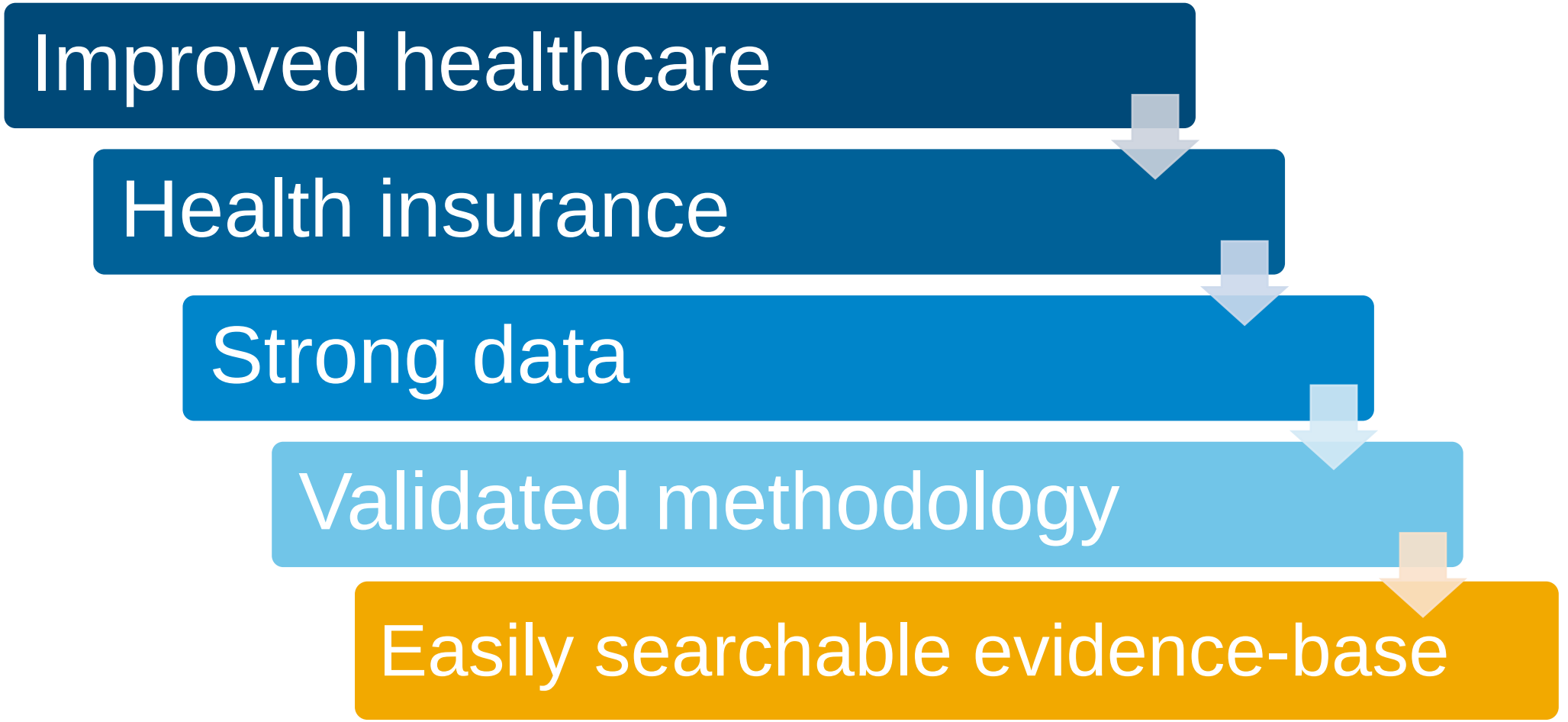
Branford Marsalis

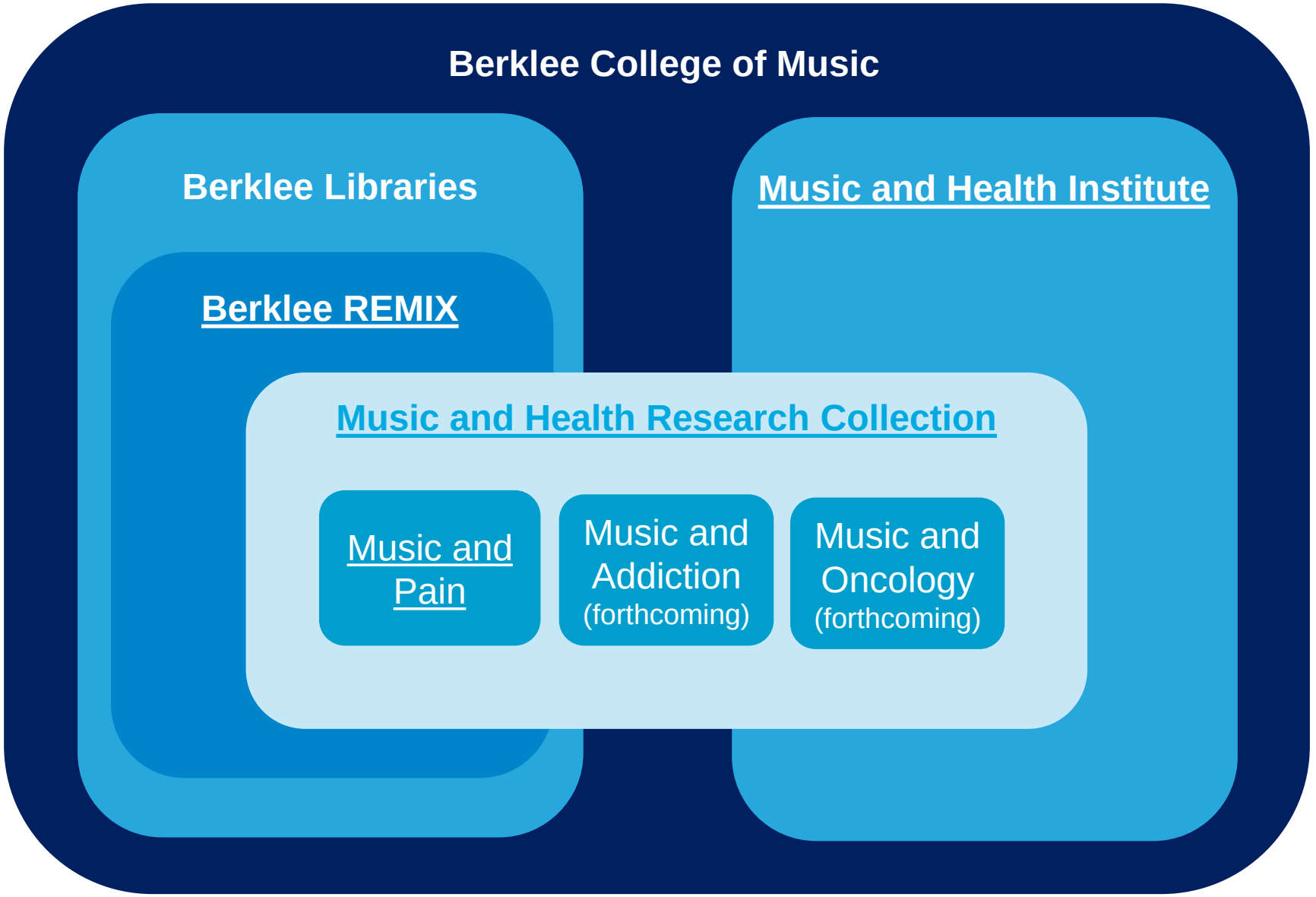
The preeminent institute of contemporary music and the performing arts.

Chaka Khan

Trey Parker

Rationale for the Music and Health Research Collection




Berklee College of Music
Berklee Libraries
Music and Health Institute
Berklee REMIX
Music and Health Research Collection
Music and Pain
Music and Addiction (forthcoming)
Music and Oncology (forthcoming)

BROWSE
Collections
Disciplines
Authors

SEARCH
Enter search terms:
Search
in this collection
Advanced Search
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Notify me via email or RSS

MHI LINKS
Berklee Music and Health Institute
MHI FAQ
MHI Taxonomy
MHI Study Types

https://remix.berklee.edu/mhi/

MUSIC AND HEALTH INSTITUTE RESEARCH COLLECTION

Acting Director: Joy Allen, PhD, MT-BC

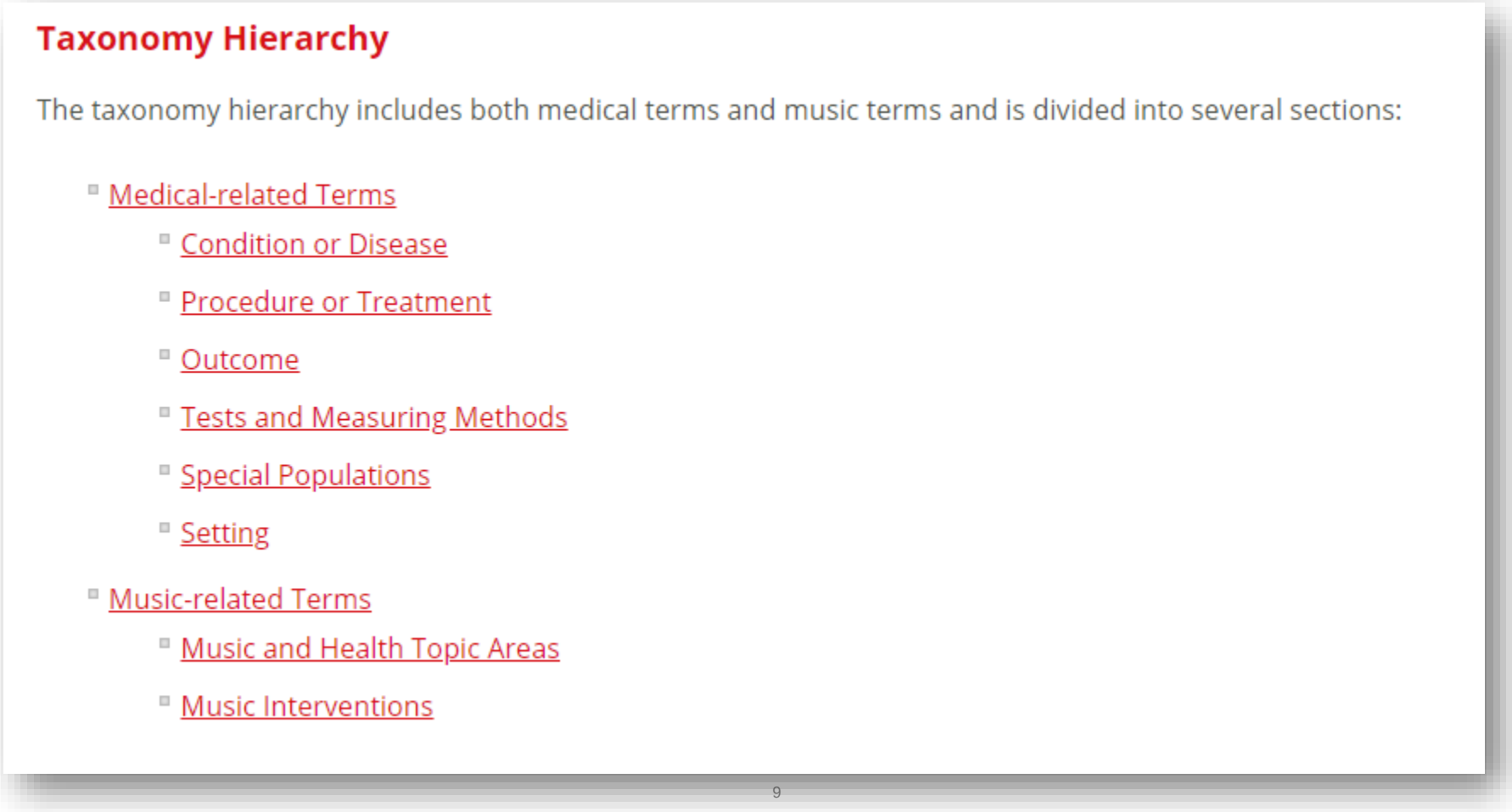
The Berklee Music and Health Institute engages the innovative ecosystem of academic, artistic, scientific, entrepreneurial, and technological talent, bringing together the most creative minds to help accelerate ideation and develop solutions that can improve health and wellbeing for individuals and communities.

The Berklee Music and Health Institute Research Collection contains scientific papers from 2000 to the present on topics related to music and health.

Learn more about the collection and how to use it by reading our Search Tips and Frequently Asked Questions (FAQs). You may also be interested to learn more about the MHI Taxonomy or how we classify Study Types. Choose a link below to see papers written for Music and Health Exchange events or to browse through a collection of research on music and pain.

Project Introduction: Music & Health Taxonomy

Music & Health Institute (MHI) Taxonomy displayed:
https://remix.berklee.edu/mhi/taxonomy.html



Project Introduction: Music & Health Taxonomy

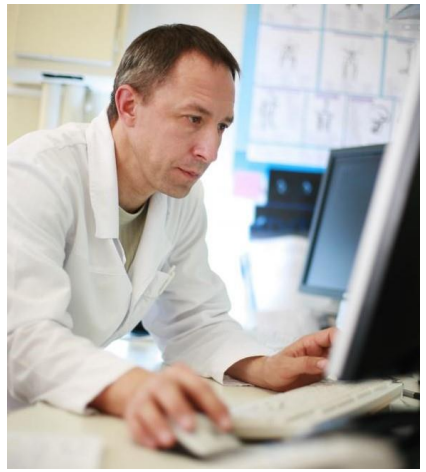
Taxonomy Project Plan

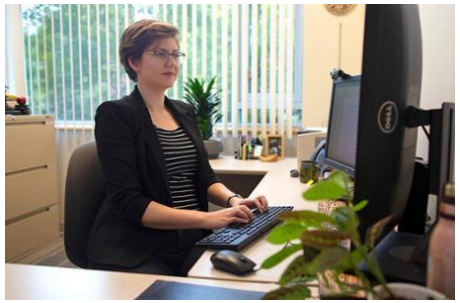
1. Analyze sample content (from among 331 Music & Pain articles)
2. Collect any existing vocabularies
3. Gather and organize terms to reflect the specificity of the content
4. Evaluate Digital Commons user interface for taxonomy support
5. Obtain stakeholder/sample user input
6. Design the taxonomy type and structure to take into consideration user needs
7. Document the taxonomy and indexing policies
8. Build out the taxonomy
9. Test the taxonomy with sample document indexing
10. Update the taxonomy with additional terms indicated, once indexing begins

Challenge: Taxonomy Design for Diverse Users

Music & Health Institute Research Collection Intended users include

- Students
- Music/music therapy scholars
- Medical/health scholars
- Music therapists
- Physicians, nurses, and other medical providers
- Other alternative therapy specialists
- Music and health services business/industry people





- ➢ Have different research strategies, approaches, goals
- ➢ Use different terminology

  Example: Physicians refer to “patients,” whereas music therapists refer to “clients.”

Challenge: Taxonomy Design for Diverse Users

Challenges in obtaining input via interviews with potential users

Always difficult when users are external

- Demands at least 30 minutes of someone's time
- Only known connections
- Only in certain fields
- Very low resulting number (5)

Interviewees comprised:

- 2 music therapists
- 2 medical doctors with an interest in music in medicine
- 1 professor of medicine (also MD)
- Other potential contacts not reached in time

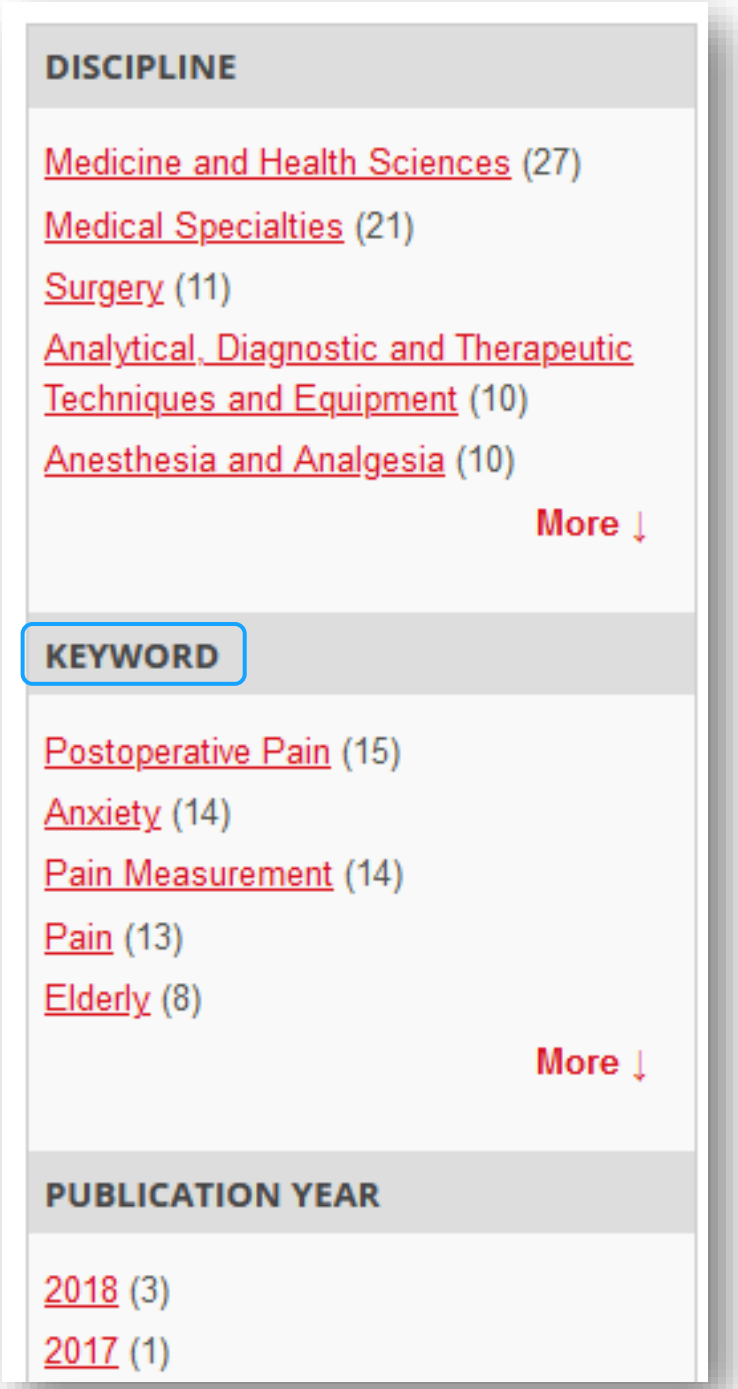
Challenge: User Interface Limitations

Digital Commons platform limitations

- Only a single field for subjects (called keyword)
  - no support for multiple facets/filters
  - MeSH and our taxonomy terms combined
- Does not make use of synonyms/variants/ alternative labels in user search/browse
- Users can limit results with the selection of only a single subject term
- Displayed list of terms on search results listed by ranked frequency

DIGITALCOMMONS®

https://bepress.com/products/digital-commons



Challenge: User Interface Limitations

Resolutions for user interface limitations

- Designed a quasi-faceted taxonomy to support comprehensive indexing, if not end-user browsing.
- Displayed the full taxonomy on the website as a user guide, since synonyms won't display and users can only select a single subject for limiting.
- Chose term labels with the widest acceptable use and understanding.
- Included limited synonyms at least to aide to indexers.
- Used same capitalization style as MeSH, so terms can be intermixed in the same Keyword field.

Challenge: Taxonomy Integration

The new MHI Taxonomy needed to be used along with and integrate with:

- Disciplines:
  already incorporated into the Digital Commons platform

- Medical Subject Headings and other terms:
  already pre-indexed to many articles
  - 72% of 331 records had MeSH indexing
  - 25% of 331 had other pre-indexed terms, in addition or instead of MeSH

Challenge: Taxonomy Integration

Digital Commons Disciplines

- Overly specific and thus overlapping with topics
- Specific in medicine, but not in music/music therapy

https://bepress.com/wp-content/uploads/2016/12/bepress_Disciplines_taxonomy.pdf

Resolution:

- Attempted not to duplicate discipline terms,
  but rather have MHI Taxonomy terms as complementary.

https://remix.berklee.edu/do/discipline_browser/disciplines

Challenge: Taxonomy Integration

Medical Subject Headings (MeSH)

- Outdated use of capitalization and inverted (noun, adjective) formats
- Focused on “medicine” from the perspective of physicians and medical researchers; not healthcare, nursing, and allied health services
- High-frequency terms (which display first) not useful, such as for population groups (Adult, Male, Patients)

https://meshb.nlm.nih.gov/search

Resolutions:

- Adopted same title capitalization for the MHI Taxonomy to merge them
- Suppressed a list of high-use but not useful MeSH and other pre-indexed terms

Challenge: Taxonomy Integration

Not-useful terms: Pre-indexed terms suppressed from display on records

Too frequent

Adult
Female
Humans
Male
Middle Aged
Music
Music and Other Disciplines
Music Theory/Analysis/Composition
Music Therapy
Patients
Research
Young Adult

Inaccurate or inappropriate

Listening Tests
Live Performance
Medicine (Performing Arts)

Not useful

Sound
Treatment Outcome

Taxonomy use in indexing

Overview of Indexing

- Each article should be indexed with at least one taxonomy term from as many categories as possible.
  - Medical Terms section of taxonomy: 6 major categories
  - Music Terms section of taxonomy: 2 major categories
  - Study Types and Disciplines also indexed for all articles
  - Most articles ended up with 18 – 25 taxonomy terms after all categories were covered.

The Effects of Music on Pain: A Meta-analysis

J. H. Lee

Journal
Journal of Music Therapy

Year
2016

Abstract
BACKGROUND: Numerous meta-analyses have been conducted on the topic of music and pain, with the latest comprehensive study published in 2006. Since that time, more than 70 randomized controlled trials (RCTs) have been published, necessitating a new and comprehensive review. OBJECTIVE: The aim of this meta-analysis was to examine published RCT studies investigating the effect of music on pain. METHODS: The present study included RCTs published between 1995 and 2014. Studies were obtained by searching 12 databases and hand-searching related journals and reference lists. Main outcomes were pain intensity, emotional distress from pain, vital signs, and amount of analgesic intake. Study quality was evaluated according to the Cochrane Collaboration guidelines. RESULTS: Analysis of the 97 included studies revealed that music interventions had statistically significant effects in decreasing pain on 0-10 pain scales (MD = -1.13), other pain scales (SMD = -0.39), emotional distress from pain (MD = -10.83), anesthetic use (SMD = -0.56), opioid intake (SMD = -0.24), non-opioid intake (SMD = -0.54), heart rate (MD = -4.25), systolic blood pressure (MD = -3.34), diastolic blood pressure (MD = -1.18), and respiration rate (MD = -1.46). Subgroup and moderator analyses yielded additional clinically informative outcomes. CONCLUSIONS: Considering all the possible benefits, music interventions may provide an effective complementary approach for the relief of acute, procedural, and cancer/chronic pain in the medical setting.

Music and Health Institute Terms
Acute Pain; Analgesic Intake; Anesthetic Intake; Blood Pressure; Cancer; Chronic Pain; Distress; Heart Rate; Medication Use; Music Listening; Music Medicine; Opioid Intake; Pain Management and Control; Pain Score or Rating; Pain Severity; Pain; Procedural Pain; Recorded Music Listening; Respiratory Rate; Self-Report Measures; Vital signs

Taxonomy use in indexing

Challenge: Indexing

- Due to diversity of audience, indexing of broader terms is necessary when narrower term is used.
  - If Asthma is mentioned in the abstract, also use broader term “Respiratory Conditions”
- The taxonomy included scope notes, synonyms, and variants for some terms but parameters still needed to be defined for indexing.
  - “Pain Management” and “Pain Control” were originally separate terms. Terms were combined into “Pain Management and Control” for clarity.
  - When should assumptions be made? Does “Music Listening” imply “Recorded Music Listening”?

Questions/Contact

Brandy King
Wilmington, MA

www.knowledge-linking.com

www.linkedin.com/in/brandyking

brandy@knowledge-linking.com

Heather Hedden
Carlisle, MA

www.hedden-information.com

accidental-taxonomist.blogspot.com

www.linkedin.com/in/hedden

heather@hedden.net

Christine Karpeles
Chicago, IL

www.linkedin.com/in/christine-karpeles-906b9910

ckarpeles@gmail.com