



# Contents

<i>Acknowledgments</i>	xv
<i>Preface</i>	xvii
Organization of the Book	xviii
Online Resources (Instructor and Student Resources)	xix
To the Teacher	xx
To the Student	xx
<b>PART I: INTRODUCING MUSIC PSYCHOLOGY</b>	<b>1</b>
<b>1 What is Music Psychology?</b>	<b>3</b>
The Purview of Music Psychology	4
A Model of Music Psychology	5
Contributions from Biology	5
Contributions from Anthropology	6
Contributions from Philosophy	6
Contributions from Education	6
Contributions from Psychology	7
Contributions from Sociology	7
Contributions from Physics	8
Contributions from Music	8
A Brief History of Music Psychology	10
An Overview of the Literature in Music Psychology	12
Conclusion	13
Discussion Questions	14
Notes	15
<b>2 Philosophical Issues in Music Psychology</b>	<b>16</b>
Human and Musical Nature	16
Biological Differences	17
Adaptability	18
Cultural Development	19
Symbolic Behaviors	19
Love	20
Play	21
Religion	21
Technology	21
Aesthetic Sensitivity	22
Knowledge	23

	The Interface of Music Philosophy and Music Psychology	23
	General Philosophical Approaches	23
	The Science of Beauty	26
	Experimental Aesthetics	26
	The Golden Mean and Mathematical Influences	26
	A Philosophical Paradigm Shift in Music Psychology	28
	Music as a Way of Knowing	29
	Is Music Psychology Encroaching on Music Philosophy's Territory?	31
	Seashore's Involvement with Eugenics	33
	Conclusion	35
	Discussion Questions	35
	Note	36
<b>3</b>	<b>How We Came to Be Musical</b>	<b>37</b>
	Rhythm, A Fundamental Life Process	38
	Natural Soundscapes	43
	Parent-infant Bonding	47
	The Acquisition of Language	51
	Music as a Way of Knowing	51
	Social Organization	52
	Conclusion	53
	Discussion Questions	54
<b>4</b>	<b>Music Around the World and Across Time</b>	<b>56</b>
	Timeline of Early Artistic Behaviors	58
	Prehistoric Cave and Rock Art <sup>[ISR]</sup>	62
	Art and Technology	63
	Invariants	65
	Religion	65
	Celebrations	66
	Altered States of Consciousness	67
	Music: A Human Invariant	67
	Emotional Expression (Merriam); Regulation of an Individual's Emotional, Cognitive, or Physiological State (Clayton)	72
	Aesthetic Enjoyment (Merriam)	72
	Entertainment (Merriam); Personal Enjoyment, Games (Gregory)	72
	Communication (Merriam, Gregory)	73
	Symbolic Representation (Merriam, Clayton); Personal Symbol (Gregory)	74
	Physical Response (Merriam); Dancing (Clayton)	75
	Enforcing Conformity to Social Norms (Merriam); Mediation Between Self and Other (Clayton)	75
	Validation of Social Institutions and Religious Rituals (Merriam); Ceremonies and Festivals; Religious Music (Gregory)	75
	Contribution to the Continuity and Stability of Culture (Merriam); Ethnic or Group Identity (Gregory)	76
	Contribution to the Integration of Society (Merriam)	76
	Lullabies (Gregory)	77
	Work Music (Gregory); Coordination of Action (Clayton)	77
	Storytelling (Gregory)	77

Battle (Gregory)	78
Salesmanship (Gregory)	79
Healing, Trance (Gregory)	79
Court (Gregory)	79
Conclusion	80
Discussion Questions	81

## **PART II: PERCEIVING, UNDERSTANDING, AND RESPONDING TO MUSIC** 83

### **5 Acoustical Foundations of Music** 85

What is Sound?	85
Important Parameters of Sound	89
Measuring and Describing Sound and Vibration	91
Frequency	92
Amplitude	94
Waveform (Signal Shape)	96
Time	99
How Environment Affects Sound	102
Transmission and Absorption	103
Reflection	103
Diffraction	104
Refraction	104
Interference	105
Tuning Systems	106
Tuning in Western Music	106
Non-Western Tuning Systems	108
Acoustics of the Voice and Musical Instruments	109
The Voice	109
Aerophones	110
Chordophones	112
Idiophones, Membranophones, and Corpophones	112
Electrophones	114
Room Acoustics <sup>[ISR]</sup>	115
Conclusion	117
Discussion Questions	117

### **6 Musical Hearing** 119

The Hearing Mechanism	119
Outer Ear	120
Middle Ear	121
Inner Ear	122
From Ear to Brain	125
The Auditory Cortex	127
Conclusion	132
Discussion Questions	132

### **7 Psychoacoustics and the Perception of Music** 135

The Critical Band	136
The Perception of Pitch	137
Pitch Discrimination	140

	Pitch Matching	141
	Pitch Height and Pitch Chroma	141
	Absolute Pitch	142
	Synesthesia	144
	The Perception of Loudness	145
	The Perception of Timbre	146
	The Perception of Duration	148
	Secondary Relationships	150
	Pitch	150
	Loudness	152
	Timbre	152
	Duration	152
	Volume and Density	152
	Conclusion	153
	Discussion Questions	153
	Note	154
<b>8</b>	<b>Music Cognition</b>	<b>155</b>
	Gestalt Laws of Cognitive Organization	156
	Auditory Scene Analysis	159
	Schemata	159
	The Spotlight of Attention	160
	The Cocktail Party Phenomenon and Auditory Stream Segregation	160
	Musical Memory	162
	Statistical Learning in Music	165
	Expectancy Theory	165
	Tonality	169
	Cognition of Musical Elements	172
	Melody and Harmony	172
	Tonality in Melody Cognition	172
	Melodic Contour	172
	Consonance-Dissonance	173
	Rhythm	173
	Timbre	174
	Cognition of Larger Musical Forms	174
	Cross-Cultural Comparative Research in Music	177
	Music and Language	179
	Conclusion	181
	Discussion Questions	183
<b>9</b>	<b>Music and the Brain</b>	<b>185</b>
	Brief Introduction to the Brain	186
	Neural Plasticity	189
	Neural Pruning	190
	Critical and Sensitive Periods	190
	Neural Networks	191
	Multisensory Integration	194
	Music in the Brain	196
	Support from Ancillary Disciplines	196
	Support from Indirect Approaches	196

Special Musicians	197	
Imaging Techniques for Studying Music	200	
Electroencephalography	200	
Electrocorticography	201	
Event-Related Potentials	201	
Magnetoencephalography	202	
Positron Emission Tomography	203	
Magnetic Resonance Imaging	203	
Functional Magnetic Resonance Imaging	204	
Transcranial Magnetic Stimulation	204	
Diffusion Tensor Imaging	204	
fNIRS: Functional Near-Infrared Spectroscopy	205	
Hyperscanning	205	
Imaging Music Perception and Cognition	208	
Imaging Affective Responses to Music	208	
Imaging Musical Performance	211	
Imaging Music Learning	212	
Predictive Coding of Music (PCM) Model	213	
Conclusion	214	
Discussion Questions	215	
<b>10 Bodily Responses to Music</b>		<b>217</b>
Physiological Responses to Music	217	
Heart Rate and Pulse Rate	219	
Blood Pressure	220	
Respiration	221	
Skin Conductance Responses	221	
Neurochemical Responses	222	
Skin, Finger, or Body Temperature	222	
Miscellaneous Responses	222	
Physical Responses to Music	225	
Muscular and Motor Responses	225	
Chills and Tears	227	
Facial Gestures	228	
Body Movements	228	
Discussion of Psychophysiological Variables	229	
Conclusion	232	
Discussion Questions	233	
<b>11 Musical Emotions<sup>[ISR]</sup></b>		<b>235</b>
Introduction to the Study of Emotions	236	
The Role of Expectations in Musical Emotions	239	
Measuring Musical Emotions	242	
Perceived Emotions: The Cognitivist Position	246	
Induced Musical Emotions: The Emotivist Position	248	
A Third Viewpoint: Aesthetic Trinity Theory	253	
Musical Emotions in Everyday Experiences	256	
Conclusion	260	
Discussion Questions	260	

	<b>PART III: BEING MUSICAL</b>	<b>263</b>
<b>12</b>	<b>The Musical Person</b>	<b>265</b>
	Is Musicality Inherited or Acquired? 265	
	Genetic Factors in Musicality 266	
	The Acquisition of Musical Attributes 269	
	Summary of the Inheritance/Acquisition of Musical Attributes 270	
	The Relationship of Musical Attributes to Other Human Attributes 271	
	The Musical Personality 272	
	Religious and Spiritual Aspects 275	
	Musical Identity 279	
	Musical Preferences 281	
	Preferences for Instruments 282	
	Preferences for Musical Genres 283	
	The Listener 285	
	The Music 285	
	Situations and Contexts 286	
	Conclusion 287	
	Discussion Questions 288	
<b>13</b>	<b>Music Performance</b>	<b>290</b>
	Motor Skills 291	
	Neuromotor Aspects of Music Making 292	
	Motor Aspects of Music Making 294	
	Music Performance 294	
	The Acquisition of Motor Skills 296	
	Audio-Motor and Mirror Neuron Systems 296	
	Quantity of Practice 297	
	Cognitive Skills 299	
	Quality of Practice 300	
	Mental Rehearsal 305	
	Music Reading 306	
	Expressive Skills 307	
	Body Movement 307	
	Musical Cues for Expressiveness 310	
	Musical Creativity 313	
	Memory and Creativity 314	
	Divergent and Convergent Thinking 315	
	Flow 315	
	Improvisation 316	
	Conclusion 320	
	Discussion Questions 320	
<b>14</b>	<b>The Psychology of Music Learning</b>	<b>322</b>
	Psychoanalysis 322	
	Behavioral Psychology 325	
	Cognitive Approaches 328	
	Humanistic Psychology 329	
	Gestalt Psychology 331	
	Developmental Psychology 332	
	Social Psychology 334	

Cognitive Psychology	339
Taxonomies	340
Music Intelligence	342
Music Cognition, Music Learning, and Reflective Thinking	345
Cognitive Neuroscience	346
Cognitive Load Theory	349
Explicit Instruction	349
Worked Examples	350
Connectivism	351
Learning Styles	353
Music Teaching and Learning	353
Conclusion	354
Discussion Questions	356
<b>15 Music and Health</b>	<b>358</b>
Music Therapy	359
Alzheimer's Disease	363
Autism	363
Cerebral Palsy	363
Dyslexia	364
Parkinson's Disease and Stroke	365
Premature and Newborn Infants	365
Psychiatric Disorders <sup>[ISR]</sup>	367
Music Medicine	367
Aphasia	369
Stress, Pain, Anxiety, and the Immune System	370
Performing Arts Medicine	371
Hearing Health <sup>[ISR]</sup>	372
Vocal Health	375
Bodily Health	376
Psychosocial Health	378
Performance Anxiety <sup>[ISR]</sup>	378
Other Mental Health Issues	382
Music and Wellbeing	383
Conclusion	386
Discussion Questions	386
<b>16 Music in Social Contexts</b>	<b>388</b>
Music in Society	388
From Birth to Death	388
From Lowest to Highest Cognitive Functioning	389
From One Person to Thousands	389
Reflections of Society in Music	392
Social Behaviors Among Performing Musicians	393
Social Behaviors Among Music Listeners	395
The Influence of Music on Social Behaviors	396
Music as a Socializing Agent	396
The Influence of Music in the Workplace	399
The Influence of Music on Thought, Attitude, and Social Behavior	401
Conclusion	403
Discussion Questions	405

**Epilogue: Ruminations on Music Psychology**

406

- R1. What is Music Psychology, and Who Conducts Music Psychology Research? 406
- R2. Interactions between Philosophy and Music Psychology 408
- R3. The Triumvirate of Theory, Research, and Practice 410
- R4. Basic and Applied Research 412
- R5. Quantitative and Qualitative Research 413
- R6. Formal and Informal Music Experiences 414
- R7. Global Perspectives 415
- R8. Toward a Cultural Music Psychology 417
- R9. Replicability of Research Findings 418
- R10. A Music Psychology Research Collaboratory 419
- Implications for Future Research 420
- Discussion Questions 422
- Notes 422

*References*

424



Additional Materials <https://musicinthehumanexperience.com/additional-materials/>



Appendix A <https://musicinthehumanexperience.com/appendix-a/>



References and Index <https://musicinthehumanexperience.com/references-index/>



Index <https://musicinthehumanexperience.com/index/>