The Science-Music Borderlands

Reckoning with the Past and Imagining the Future

Edited by: Elizabeth H. Margulis, Psyche Loui, Deirdre Loughridge

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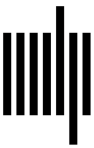

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17 The Musician-Nonmusician Conundrum and Developmental Music Research

Beatriz Ilari and Assal Habibi

Introduction

- A family sings *tanti auguri a te* to celebrate Grandma's birthday.
- A pianist repeats a virtuosic passage from a sonata, metronome clicking in the back. With each repetition, she picks up the tempo. After several minutes, the passage sounds nearly perfect. Her playing seems effortless, yet she does not seem satisfied. She takes a short break and then starts over.
- A DJ creates and shares beats with fellow musicians using an online platform.
- A girl sings while playing with LEGO in the corner of her kindergarten classroom. Her melodious voice goes up and down as she works on her construction project. At first it is possible to recognize fragments of a well-known pop tune, but the melody morphs into something completely different and unrecognizable.
- An elderly man teaches a young boy to play the tabla through the process of apprenticeship.

Musical engagement occurs across the life span and in multiple ways. The emergence of the term *musicking* (Small, 1998) propelled new thinking by suggesting that music is an action rather than a "thing" to be learned. Musicking refers to multiple forms of musical engagement, such as playing an instrument, composing, dancing, and listening. Small also stressed the relational nature of musicking and its meaning-making character. Though not without critics (Hesmondalgh, 2013), a main contribution of Small's work involves the recognition of different forms of human musical engagement, as well as their ubiquity. Similar to our understanding of musicking as plural, context bound, and polysemic, the term *musician* is context bound and takes on multiple meanings. While some would consider all the music makers described in the opening vignettes as musicians, others would vehemently oppose this idea, arguing that only a few could be labeled as such. The same happens in music research, where multiple—and at times

contrasting—definitions of *musician* coexist. Music psychology research, in particular, tends to dichotomize and label study participants as musicians or nonmusicians. This binary is defined in arbitrary ways, such as the number of years of formal music instruction (Daly & Hall, 2018; Zhang et al., 2020); is inconsistent across studies (Cogo-Moreira & Lamont, 2018); and, in its essence, does not capture the complexity of the musical experiences of individuals (Zentner & Gingras, 2019). These terms *musician* and *nonmusician* are also grounded in Western and Westernized (i.e., conservatory, specialist school) notions of musicianship and musical expertise and, most often, on presentational forms of music making (Turino, 2008), with a focus on "skilled producers of music" (Rickard & Chin, 2017).

In this chapter, we discuss the musician-nonmusician binary that is still prevalent in music research involving humans, with a focus on developmental studies. We are two scholars—a music educator and a neuroscientist—who have collaborated for over a decade on developmental music studies (e.g., Habibi et al., 2018; Ilari et al., 2016). Conversations about the nature of musicality, musicianship, and musical development are part of our collaborative work, as our original fields of study are based on different epistemologies. For purposes of this chapter, we define musical development as changes that occur to music perception, cognition, and action over the course of one's lifetime and as a result of musical participation and affordances in varied contexts and cultures and over the course of time (Hargreaves & Lamont, 2019). Although they are sometimes conflated, we understand *musicality* (the quality of being musical) as being distinct from *musicianship* (the skills that allow one to sing, play, compose, and improvise "well").

We begin the chapter with definitions of *musician* that are commonly found in research on human behavior in four fields: music psychology, music education, ethnomusicology, and neuroscience. Next, we discuss how potential, skill development, and self-identification—three converging categories that appear in definitions in the aforementioned fields—relate to child development. We conclude the chapter with suggestions for future research.

The Definitional Conundrum

A pervasive idea in many Western and Westernized cultures is that a musician is an able-bodied adult (often male) with plenty of technical and interpretative skills and a number of years of formal music instruction (Daly & Hall, 2018; Rickard & Chin, 2017). Definitions of the musician tend to be narrow in scope and are almost always associated with singing, playing an instrument, or composing (Rickard & Chin, 2017). This is understandable, given the prevalence of Western "art" music in educational institutions and their emphases on individual traits and presentational modes of music making

(Turino, 2008). Musicians in this tradition are known to spend a considerable amount of time perfecting their craft. While beliefs regarding musical potential and talent vary (McPherson & Hallam, 2008; Blacking, 1973), most people seem to endorse the idea that formal music learning ought to begin in childhood because musical skills take time to develop and require deliberate practice and focused attention (Ericsson et al., 1993). Age at the onset of training, length of training, type of music education (e.g., private music lessons, music theory), having a degree in music, and self-identification have been used to categorize musicians from nonmusicians. Whether by training or occupation, professionalization is another criterion used by scholars to define musicians. Yet many professional musicians, especially in the popular music scene, have no formal training, despite their extraordinary musical skills. There is another category of musician who does not make a living from music yet displays a high level of musicianship: the musical dilettante or amateur. Some amateur musicians have extraordinary musical skills and may be known as professional-amateurs, or pro-am (Leadbeater & Miller, 2004). Thus, a combination of training, occupation, self-identification, and music skills seems to be the defining feature of the musician in human behavior studies.

If defining a musician is difficult, defining a nonmusician is an even more challenging task. Based on the criteria used to define a musician, a nonmusician can be defined as an individual who lacks formal training, lacks musical skills, or does not self-identify as a musician. But, as many would argue, the term *nonmusician* is an oxymoron. No one is really devoid of musical skills (Rickard & Chin, 2017; Zentner & Gingras, 2019), as all humans are endowed with musical potential (Blacking, 1973; Malloch & Trevarthen, 2009; Sloboda, 2005). Aside from misrepresenting human potential, the term *nonmusician* devalues skills that are inherent to being musical, such as the ability to listen to and be moved by music, and it is also detrimental to identity construction and musical participation (see Hargreaves & Lamont, 2019; Henley, 2017). From an epistemological standpoint, the terms *musician* and *nonmusician* also raise questions about the nature and origins of musicianship and musicality. What is human musicality? Is it innate or acquired? What enables and what constrains the realization of musical potential and the development of musicianship in childhood? These questions have been answered in various ways across disciplines, as discussed next.

Disciplinary Perspectives

Education

Education is a field that focuses on nurturing the skills of learners from different age groups and ability levels. This probably explains why most music educators are reluctant to speak of nonmusicians; they tend to value potential over talent. But this is not

to say that they do not discuss talent or innate abilities. Such conversations are part of the everyday life of music education programs and institutions worldwide.

School-based programs are at the core of a large number of education studies. In such research, participation in music programs is often used as the criterion to distinguish "music students or music majors" from "non-music students or non-majors" (Elpus & Abril, 2016). Musical potential, in turn, is defined in multiple ways, depending on student age, type of program, and repertoire of practice (see Gordon, 1971; Gudmundsdottir, 2020). Music programs with a primary focus on Western music practices (e.g., orchestras, bands, individual performance) have a tendency to legitimize views of the musician outlined earlier, with a focus on specialized, individual performance. Children and youths who are precocious and develop the adult-like musical skills valued by such institutions are often given the title "musician," a practice that has existed for many years (e.g., Gjerdingen, 2020).

The field of music education has expanded considerably in the past few decades to encompass individual and collective experiences. There is now recognition that musical potential can be nurtured and developed in multiple spaces and through informal approaches (see, e.g., Green, 2017; Folkestad, 2005). Informal music learning is predicated on the idea of individuals getting together to learn music on their own by listening to recordings and playing "by ear" with peer groups (Green, 2017). Rules and repertoires of practice are defined by individuals in these peer groups, like in rock bands. Unlike in formal learning, where definitions of the musician are determined by specific proficiencies determined a priori by experts (e.g., acquiring specific repertoires, passing an audition or test), in informal learning, the social group and its shared musical-aesthetic values define the musician (Bennett, 2017). Along similar lines, many musicians are autodidacts—they develop musical skills and become musicians "on their own" (Watson, 2012). Thus, music training alone can take multiple forms, each making different demands on the individual and giving rise to different "types" of musicians.

Ethnomusicology

Ethnomusicology celebrates the plurality and richness of musical cultures. Through fieldwork and thick description (Geertz, 1973), ethnomusicologists have uncovered multiple forms of musicality, contributing to our understanding of musicianship as culturally situated. Ethnomusicological work also stresses how the characteristics of musicians vary, depending on culturally constructed notions of talent and potential, lineage, age, and particular musical skills that specific groups prioritize. Some non-Western cultures actually lack an equivalent term for musician, as all community members are known

to participate in music in some way (Rickard & Chin, 2017). The Venda of South Africa (Blacking, 1973), the BaYaka of Central Africa, and the Anang Ibibo of Nigeria are examples of cultural groups in which musical participation is part of the fabric of everyday life among children and adults alike (Rickard & Chin, 2017).

Ethnomusicological work has also revealed the existence of individuals who are highly skilled in music yet do not self-identify as a musician on the basis of the parameters outlined at the beginning of this chapter. For the Griots in Mali, for example, musicianship is defined primarily by lineage (Durán, 2017). The muezzins, who are responsible for the Muslim "call to prayer," are sometimes called "criers" or "reciters" and are not necessarily considered musicians. Similarly, many children from around the world do not self-identify as musicians, despite having solid musical skills obtained in the context of everyday musicking through processes of enskillment (Durán, 2017), intent community participation, or guided repetition (Rogoff et al., 2007). These various modes of music and learning transmission indicate that cultural groups hold different values and prioritize different musical features and skills, rendering distinctive (and at times fluid) definitions of the musician. Additionally, in cultures where participatory musicking is the norm and not the exception (see Turino, 2008), the proportion of self-proclaimed musicians can be high. These communities are often collectivist (Hofstede, 2011), with the needs and goals of the group taking precedence over those of individuals. One example is the city of Salvador in northeastern Brazil, where many residents self-identify as musicians (Brasil, 2020). In this community, what differentiates musicians from nonmusicians is professionalization, or earning a living through music. Clearly, culture plays a central role in defining who is called a musician, as well as the precision (or imprecision) of that definition.

Psychology

Psychologists study the human mind and human behavior. Two contrasting views of musicians and nonmusicians are commonly seen in psychological work. Evolutionary psychologists tend to view musicality as a biological trait (e.g., Honing, 2018), whereas cognitive psychologists often define the musician (and consequently the nonmusician) based on musical skills, potential (or predisposition), or identity, with musical skills receiving the most attention (Zhang et al., 2020). This is not surprising, given cognitive psychologists' long interest in the acquisition and development of musical skills (Drake et al., 2000; Hargreaves, 1986; Hargreaves & Lamont, 2019; Zentner & Gingras, 2019). A solid body of knowledge on pitch and rhythmic perception and discrimination, fine motor skills, memory, auditory-memory integration, composition, creativity, instrumental and vocal performance, sight-singing, and improvisation has

helped scholars formulate theories and models of musical expertise (e.g., Lehmann et al., 2018). Because musical skills take time to develop and demand deliberate practice, the number of years of musical training has often been used to define one's level of musicianship. Individuals who begin training early often exhibit the greatest influence on measures of auditory and motor function. Thus, age at the onset of training is often considered a determining factor in musicianship (Penhune, 2011).

Along with musical skills, musical potential, achievement, and ability are considered markers of musicianship, although each is defined in different ways. Zentner and Gingras (2019) consider aptitude (or potential) and achievement to be two components of a general musical ability. The use of standardized musical tests to study musical ability dates back to the beginning of the twentieth century (see Zentner & Gingras, 2019). The Goldsmiths Musical Sophistication Index (MSI; Müllensiefen et al., 2014), the Exposure to Music in Childhood Inventory (EMCI; Cogo-Moreira & Lamont, 2018), and the Montreal Battery for Evaluation of Musical Abilities (MBEMA; Peretz et al., 2013) have been used to examine musical ability in individuals from different age and cultural groups. Although not designed specifically for children, the MSI is likely the only measure that combines a self-reporting instrument with a listening task. The choice of "musical sophistication" as the test's focus also represents a shift from the musician-nonmusician binary. The EMCI represents one of the few attempts to develop a standardized measure of musical skills in Brazil. The MBEMA includes tests of memory, pitch, and rhythmic discrimination based on nonverbal stimuli, making it applicable to the study of musical skills in children from diverse cultural and linguistic backgrounds and with varying levels of proficiency. Although these three measures are known to be reliable, they are somewhat limited, in that they are still bound by Westernized conceptions of music and musicianship. For instance, the MSI includes statements such as "I am not able to sing in harmony when somebody is singing a familiar tune" or "I don't spend much of my disposable income on music." The EMCI includes both listening tasks and a self-reporting component. Some questions are associated with context and with time-specific urban experiences that imply access to technology (e.g., "Do you watch *The Voice Brazil*?" and "Do you download music from the internet?"). Furthermore, the EMCI does not include questions on community-based musicking. Although it is difficult to create a measure of musical engagement that is universal and all encompassing (Zentner & Gingras, 2019), the MSI, EMCI, and MBEMA represent positive steps in that direction.

Self-identification as a musician is another approach psychologists have used to distinguish musicians from nonmusicians (Rickard & Chin, 2017). Self-identification is obviously linked to issues of musical potential, skill development, and cultural norms.

Given the Western and Westernized biases of psychological research (Heinrich, 2020), it comes as no surprise that self-identification studies in the field tend to be connected with presentational forms of musicking (see Hill, 2018; Turino, 2008).

Neurosciences

The neurosciences study primarily the brain and the nervous system. The brain has the ability to adapt its structure and function in response to learning or to new experiences through the dynamic reorganization of synaptic connections, pruning, and myelinations broadly defined as neuroplasticity (Tardif et al., 2016). Although the human brain is shaped significantly during critical periods of early development, the rate of maturation varies across different regions of the brain; the visual system matures to adult levels within the first year of life, while the auditory and motor systems continue to develop through early adulthood (Moore & Linthicum, 2007). Evidence shows that experience-dependent neuroplasticity continues across the life span and that the adult brain can be significantly malleable in terms of learning new skills. Singing in a band, playing a solo musical instrument, and drumming in a circle with others are all complex tasks that simultaneously engage the motor, sensory, cognitive, and affective systems of the brain. Specifically, they all require a high degree of sensorimotor integration, where one has to connect different sounds with specific motor output and make necessary adjustments through top-down feedback from the executive and affective systems (Zatorre et al., 2007; Brown et al., 2015). Over the last three decades, accumulated scientific evidence has demonstrated that musical training has pronounced effects on the function and structure of the human brain (see Gaser & Schlaug, 2003). However, most studies of musically induced neuroplasticity use years of training and/or age at the onset of training to separate musicians from nonmusicians.

There is evidence that early experience differentially influences skill acquisition and brain structure in several domains, including language development. It has been suggested that a particularly sensitive period, when learning music can have lasting and strong effects, occurs at seven to eight years of age (Penhune, 2011). Based on this sensitive period, musicians are typically characterized as individuals who started learning music early and have had ten years or more of formal musical training. However, there is a wide discrepancy in the number of hours of training, what constitutes "formal" training, and the current status of musicianship and practice. For example, a forty-year-old adult who began playing the cello at age seven and continued playing for fifteen years but stopped after graduating from college may theoretically meet the criteria to be considered a musician, yet he may no longer self-identify as a musician after not playing music for more than a decade. To increase the possibility of observing the

greatest impact of music-related neuroplasticity in studies with relatively small sample sizes, it is common to identify musicians as skilled individuals with long-term training that began at an early age. This binary approach, however, runs the risk of missing everyone in between and including individuals who no longer engage with music.

Longitudinal studies of children that seek evidence of specific changes in behavior and brain structure related to training can provide a clearer picture of the immediate and potentially lasting effects of music learning. We used a five-year longitudinal study to evaluate the influence of music learning on child development. Two years of music training in a group setting led to increased functional development of the auditory pathways and neuroplastic structural changes in the auditory cortex (Habibi et al., 2018). There were, however, individual differences in music-related neuroplastic changes within the group of children learning music, and these were most likely influenced by genetic predispositions and environmental factors. The longitudinal design allowed a more nuanced evaluation of music training as a continuous experience instead of a binary categorization of musicians versus nonmusicians. It also allowed us to examine how genetic factors, the environment, and music learning interact to shape musical skills over time for each individual.

Points of Convergence

While each discipline uses different criteria to define the musician, there are some points of convergence. These include the notion that musical engagement influences and changes the individual in various ways, resulting in different levels of musicianship. Musical potential appears to be important to all four fields, and so is the sense that musicianship develops over time, which leads naturally into issues of time and deliberate practice (Ericsson et al., 1993). This is true even in cultures where musicians are defined by lineage. Musicianship can be attained through formal and informal learning (including autodidactism) in both presentational and participatory ways (Turino, 2008). Furthermore, the issue of self-identification seems to be present in all fields to a greater or lesser extent. But how do these points of convergence relate to developmental research?

Developmental Perspectives: The Child Musician

Earlier in the chapter, we defined musical development as changes that occur to music perception, cognition, and action over one's lifetime due to musical participation and affordances in varied contexts and cultures and over the course of time (Hargreaves & Lamont, 2019). This definition of musical development is consistent with the suggestion that development is a multifaceted and biopsychosocial phenomenon that

takes into account the bidirectional influential relations between individuals and the contexts in which they are situated (Lerner & Benson, 2013; Lerner et al., 2018). Individual attributes, proximal processes (e.g., sustained forms of reciprocal interactions with cultural objects and symbols and the immediate environment), context, and time all influence children's musical development (see also Kragness, Hannon, and Cirelli's chapter 8 in this volume).

Although musical development occurs throughout the life span (Hargreaves & Lamont, 2019), there is an uneven distribution of studies across age groups. In this chapter we focus on the period between infancy and adolescence, which coincides with our research interests and expertise. In the following sections we discuss potential, skill development and training, and self-identification—three factors described in the four fields discussed earlier—as they pertain to child development.

Potential

Musical potential can be defined as "a latent, but as yet unrealized capacity to do something musical" (Kemp & Mills, 2002, p. 3). Childhood is a time of discovery and development of the brain and body along with various skills, including musical ones. Put simply, all children are endowed with musical potential. Consistent with the systems view of development (Lerner et al., 2018), the realization of musical potential in childhood depends on a combination of brain, genes, environmental issues and affordances, personality, motivation, and disposition.

Manifestations of musical achievement are often taken as signs of musical potential (Kemp & Mills, 2002). One of the most obvious examples is when children exhibit precocious skills that are valued by a particular cultural group, such as playing an instrument, singing, or inventing music (with or without the use of notation). Evidence of musical potential in childhood has been gathered through studies of the musical skills of infants and children (see the next section) and retrospective data on the musical experiences of eminent musicians (e.g., Sloboda & Howe, 1991). As noted earlier, children's musical potential has also been identified through aptitude tests (Zentner & Gingras, 2019). Carl Seashore's Measures of Musical Talents, Edwin Gordon's Audio and Music Aptitude Profile, and Bentley's Measures of Musical Abilities are some well-known musical aptitude tests for children. As informative as they are, these tests are somewhat biased toward children with musical training, and the results can be misinterpreted when used outside of their intended context, such as in schools (Kemp & Mills, 2002).

Linked to the notion of childhood as a rich period of human and musical development is the belief that the realization of musical potential is likely more efficient in early childhood. This is consistent with the concept of sensitive periods of learning in childhood

or "a window in development when specific training or experience produces long-term changes in behavior and the brain, above and beyond those associated with that same experience at a different time during development" (Bailey & Penhune, 2013; Cho, 2019). The identification of sensitive periods in the development of musical skills (Bailey & Penhune, 2013) and faster maturation of the brain's auditory regions and enhanced connectivity between auditory and motor regions in children who start formal musical training before a specific age (see Habibi et al., 2018; Bengtsson et al., 2005) supports the association between musical potential and early-onset training. Beyond brain and behavioral studies, observational research with young children supports the existence of early musical potential in proto-conversations between neonates and their caregivers (Malloch & Trevarthen, 2009) and preschoolers' musical conducts (Delalande & Cornera, 2010).

But it is important to remember that the perception, identification, and celebration of musical potential are also culturally situated. As discussed earlier, musical potential may be linked to lineage (see Durán, 2017) or based on defining characteristics of the music practiced by each individual culture. As an example, while tambor de crioula players of Maranhão identify drumming, rhythmic improvisation, and endurance as defining features of musical potential and expertise, the ribeirinhos of the Brazilian Amazon believe that singing with a melodious and enchanting voice is the determining factor (Ilari, 2006). These contrasting views are consistent with the notion that musical potential—in childhood and beyond—comes in multiple shapes and forms (Kemp & Mills, 2002).

Skill Development

Children develop musically in leaps and bounds. The fragile newborn enters the world with sophisticated music perceptual abilities (Trehub, 2003), such as the capacity to detect beat violations (Winkler et al., 2009), familiar voices (DeCasper & Fifer, 1980), and melodies (Hepper, 1991). A few weeks later, babies show a remarkable ability to discriminate and categorize pitches and rhythmic structures (Trehub, 2003). Although babies typically do not entrain to the musical beat, rudiments of rhythmic entrainment are already present at the beginning of life (Ilari, 2015). Babies and young children are fast music learners who develop musical skills concomitantly with skills in other areas (e.g., auditory, motor). As children develop and grow, they gradually become more proficient in performing and responding to music in their surroundings (see Kirschner & Ilari, 2014). Importantly, formal music lessons in early childhood may be more the exception than the rule (Young, 2018).

For those who learn music formally, musical development is known to follow a nonlinear path, in the sense that children go through phases of rapid development interspersed with phases of slow or no apparent development (e.g., Ilari et al., 2016). These "ups and downs" of musical development have been interpreted in multiple ways (see,

e.g., Delalande & Cornera, 2010; Bamberger, 2013). Another aspect of musical development that has been explored is the notion of music learning plateaus, or periods when the development of specific skills appears to stabilize (Bailey & Penhune, 2013; Ilari et al., 2016).

Studies on the development of skills are obviously linked to researchers' conceptualizations of the musical child. The sociology of childhood invites scholars to reflect on taken-for-granted categories such as infancy, childhood, and development (see Young, 2018). Musical development researchers usually conceptualize childhood in three distinct ways: being ("in the moment"), becoming ("as future adults"), or a combination of both. As an example, in our study of musical improvisation, we uncovered age contrasts in the conceptualization of children's improvised products and processes. We learned that young children's improvisation skills are typically interpreted in a holistic fashion and in light of their overall development, whereas improvisation skills in middle childhood are often compared with those of adults (see Ilari et al., 2018). A challenge for future scholarship is to integrate these contrasting views of childhood with an understanding of development as a biopsychosocial process, with context playing a much larger role than previously thought.

Self-Identification

Despite evidence that music perception, cognition, and engagement begin very early in life (Trehub, 2003), it is not until middle childhood (around age eight) that children start to self-identify as musicians (Rickard & Chin, 2017). Around this time, children's musical skills become differentiated from those of their peers, raising self-awareness (Rickard & Chin, 2017). Although years of musical training are often used as a measure of musicianship, it is interesting that music lessons alone are not enough for children to self-identify as musicians (Rickard & Chin, 2017). Identifying as a musician happens through sustained and engaged participation in music in different settings, such as home and school (Hargreaves & Lamont, 2019). Parents and caregivers not only shape the home musical environment but also play central roles in supporting children's musical potential (Trehub, 2019). Schools and musical programs, in turn, offer opportunities for children to develop musically. Still, the idea of being "unmusical" may haunt many children and adolescents, impeding their development. As Hargreaves and Lamont suggest:

> Although provision is made in schools and other institutions for children who show promise to develop their musical skills, many others start to see themselves as being "unmusical," fail to develop their early potential and follow a downward spiral in which lack of musical self-esteem and motivation leads to lower levels of performance, which leads to still lower self-esteem, and so on. (2017, p. xvii)

Studies focusing on children's representations of music and the musician offer additional insights into their self-identification as musicians and nonmusicians. In one study, Australian children (aged nine to ten years) were asked to write a sentence beginning with "Music is . . ." and then produce a drawing for the prompt "Music and me" (Southcott & Coisatis, 2015). The findings suggested some stark gender differences, with boys drawing more images of themselves involved in solitary music listening using different technologies, and girls representing themselves engaged in collective forms of musicking. Gender differences also emerged in another study of children (aged seven to ten years) from the UK (Colley et al., 2008). In the British study, while younger children drew figures of their own sex, older girls drew more male musicians than did younger girls and boys. The authors interpreted this finding as older girls' awareness of male domination in musical performance. What these findings suggest is that children are already susceptible to social forces as they construct their identities in and through music.

The construction of identities is clearly a complex process. Rickard and Chin (2017) argue that research on musical identity has focused heavily on active music making, often overlooking how musical identities may be shaped by human participation in receptive activities such as listening to music. They have called for a broadening of perspectives on musicianship and for the inclusion of different musical activities such as listening, musical engagement in everyday life, and emotional engagement with music. The examination of activities beyond active music making is particularly relevant where so-called nonmusicians are concerned (Rickard & Chin, 2017).

A final issue is the ubiquity of music in childhood and adolescence. Children are typically more exposed to music than adults are, and adolescents listen to more music than any other age group (Hargreaves & Lamont, 2019). Adolescents are also known to be passionate about music, with musical preferences providing a way to experiment with varied identities (Hargreaves & Lamont, 2019). Interestingly, repertoires that are appreciated in adolescence may leave "imprints" in autobiographical memory and constitute a reminiscence bump later in life (Krumhansl & Zupnick, 2013). Identifying as a musician, therefore, has implications for the development of nonmusical aspects of identity in adolescence and beyond.

Ways Forward: Interdisciplinary Thinking and Research

We began this chapter by outlining Christopher Small's (1998) contribution to music scholarship, particularly his notion of musicking, or music as a form of action. We also highlighted the systems view of development, in which individual attributes (or person), proximal processes, context, and time interact in multiple ways (Bronfenbrenner &

Morris, 2006). Musical development is clearly influenced by the interactions among these factors, as children engage with music in multiple ways. As we argued throughout the chapter, it is impossible to speak of musical potential, musicality, and musicianship in the singular (see also Kemp & Mills, 2002). Musical potentials and opportunities for skill development—from unintentional, less intentional, and informal means of learning to more deliberate and formal means—play significant roles in self-identification as a musician. It is also vital to recognize the roles of individual differences, cultural context, and time ("in the moment" and the zeitgeist) in the construction of musical identities. Acknowledging the many articulations between musical potential, skill development, and self-identification is imperative for future work, particularly developmental studies in which research findings may have direct applications in education and child care. Thus, we believe that the musician-nonmusician binary does little to clarify the musical experiences of infants and children. Apart from being reductionist, the musician-nonmusician binary leaves out central aspects of the relationship between musical experiences and child development, including agency, identity work, and the enjoyment of music. Identity work and musical development are known to be intrinsically linked (Hargreaves & Lamont, 2019). Furthermore, it is important to consider the other end of the developmental spectrum, or late adulthood. Although this chapter focused primarily on childhood and adolescence, we recognize the need for more work on musicking, musicianship, and musicality in older adults to advance our understanding of musical development across the life span.

We conclude this chapter by reinforcing the need for interdisciplinary thinking and collaboration in studies on human musicking, musicality, and musicianship (see also chapter 18). Such an approach is imperative as our world continues to experience the forces of globalization, technological advances, climate change, and human migration. These forces have been influencing human musicking for some time now, as many have been keen to point out. Thus, a reconceptualization of musicians, including the very young, is long overdue and beyond urgent.

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