Open Ears – Open Minds

Listening and Understanding Music
Open Ears – Open Minds: Listening and Understanding Music
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edited by Oliver Krämer & Isolde Malmberg
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Music appears to be very important to individuals, but as Rentfrow, Goldberg, & Levitin state (2011, p. 1155): “[c]uriously, however, very little is known about why music is so important”. One possible answer to this question might lie in music’s ability to function as an expression of one’s identity. The differentiation between identities in music and music in identities made by MacDonald, Hargreaves, & Miell (2002) proves very helpful in approaching this wide area of research. Whereas identities in music especially refers to aspects of self-definition as a musician, music in identities refers to “how we use music as a means or resource for developing other aspects of our individual identities” (ibid., p. 2). The present chapter is mainly concerned with music in identities and as such with music as a means to develop psychological identity which, amongst other determinants, is related to age, gender, or nationality. Music preferences are a central facet of music’s ability to serve as a means in identity development and expression.

This chapter presents empirical results on music preferences and musical concepts and discusses them in terms of so-called open-earedness (Hargreaves 1982). It argues that identity development plays a major role in understanding the development of music preferences especially of open-earedness and that musical concepts build the background against which these processes unfold.
Theoretical Background:
Music Preferences, Musical Concepts, and Musical Identity

According to Behne (1993, p. 340) music preference refers to a present judgment in a given situation. The judgment relates to musical concepts defined as “the sum of beliefs, attitudes, information, prejudices, etc. held by an individual concerning a certain more or less defined musical object” (Behne 1975, p. 36). This object could be a music genre or a musician, for instance. Building on this definition, musical concepts are understood as associative structures stored in memory.

Musical concepts are nourished by the musical experiences that individuals gather in life and which are seen as influencing musical behavior (Behne 1975), with experiences in early childhood appearing to be of particular importance for the development of music preferences (Kleinen 2011). The notion of musical concepts also ties in with the idea of “personal networks of musical and cultural associations”, which as part of “personal musical geographies” are seen as the context for constructing musical identities (Hargreaves, Hargreaves, & North 2012, p. 168). According to Schneider and Lindenberger, personal identity is the “unique combination of those personal characteristics that the person is aware of and can use to express himself to others” (Schneider & Lindenberger 2012, p. 770). In constructing identity a person may revert to the musical concepts already learnt and relate her or his identity to them. Schäfer and Sedlmeier concluded that “the most important reasons why people like their music are its ability to express their identity and their values and its ability to bring people together” (Schäfer & Sedlmeier 2009, p. 297). North & Hargreaves (2009, p. 90) describe music as a badge in adolescents’ social cognitions. What this badge stands for and which musical objects can function as a badge is defined by a person’s musical concepts. If an individual’s network of associations is centered around a musical genre, this genre can function as a reference point for all connected social and cultural associations.

In general, research on music preference points towards the purposeful usage of music preferences in order to influence the way the individual is seen by others. Rentfrow, Goldberg, & Levitin argue for multiple influences on music preferences, such as psychological disposition, social interaction, exposure to popular media, or cultural trends. A wealth of research on adults’ music preferences indicates additional influences, which all appear connected to identity development: The personality dimension “openness for experience” (Costa & McCrae 1992) correlates with broad music preferences (Delsing et al. 2008; Rawlings & Ciancarelli 1997). A migration background enhances preferences for music from

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1 All English translations in this chapter are by the authors.
2 Detailed theoretical considerations as well as comprehensive analyses of the qualitative data summarized in this chapter will be provided in the doctoral thesis by Nicola Bunte.
3 See Sloboda, Lamont, & Greasley 2009 for a research review.
the respective countries of origin (Cremades, Oswaldo, & Lucia 2008; Teo, Hargreaves, & Lee 2008). Bourdieu (1993, p. 150) sees music preference as an indicator of a person’s belonging to a specific social class with a specific *cultural* habitus, meaning socially tied gestures and behaviour. Neither Peterson & Simkus (1992) nor Chan & Goldthorpe (2007) support this explicit attribution of music preferences to social class, but found a connection between social status and stylistic breadth of music preferences (cf. Peterson 1992; Eijck 2001). Last but not least, age and gender are often cited as key factors that explain music preferences (e.g., Hargreaves, North, & Tarrant 2006, Teo, Hargreaves, & Lee 2008; Rentfrow, Goldberg, & Levitin 2011).

Regarding children’s music preferences, age and gender are examined extensively. Research often refers to Hargreaves’ hypothesis that “younger children may be more ‘open-eared’ to forms of music regarded by adults as unconventional” (Hargreaves 1982, p. 51). By unconventional he means avant-garde, alternative, or electronic music (Hargreaves, North, & Tarrant 2006, p. 144), as well as classical and ethnic music (Hargreaves, Comber, & Colley 1995). Age as an influencing variable is inherent to Hargreaves’ developmental hypothesis, and studies support the notion that pupils lose their initial openness for various styles and forms of music during elementary school, so that at the beginning of puberty they mainly prefer current rock and pop music (e.g., Gembris & Schellberg 2007).

With regard to the variable of gender, research mostly suggests that boys are less open-eared than girls towards various or classical musical styles (Hargreaves, Comber, & Colley 1995; Gembris & Schellberg 2007). Gender-specific musical socialisation might be an explanation (Buschmehring-Wermes & Liermann 2009). This is supported by Wilke’s (2012) finding that elementary school boys already use gangsta rap to convey masculinity and display their gender. Research on the development of gender identity also hints at a stronger fixation on gender stereotypes in boys than in girls (Maccoby 2000; Ruble, Martin, & Berenbaum 2006; Beutler-Prahm 2012). Thus, differences in music preferences are possibly not just the result of gender-specific musical socialisation, but also an important step towards developing one’s own gender identity. So *music in identity* already appears to be important to elementary school children.

Hence, educational contexts should provide a variety of music experiences. Especially, active engagement in music shapes music preferences (Bourdieu 1993; Hargreaves, Comber, & Colley 1995; Louven 2011). Therefore, music-oriented programmes for young children at kindergarten and elementary schools seem a suitable way to provide (possibly) new worlds of experiences that might assist children to sharpen their sensitivity for musical styles and their aesthetic judgement. This could help children to broaden their usual musical horizons and to detect new or alternative scopes of music-related actions. A wealth of experiences might also help children to make use of specific music for their individual needs in identity development later on. The present study aims to investigate these assumptions by focusing on the development of music preferences in elementary school children.
Empirical Approach: Music Preferences, Musical Concepts, and Gender Identity

The study is part of the research project SIGrun⁴ and follows a longitudinal mixed methods approach. The following questions are addressed quantitatively:

- Can music preferences of elementary school children be described by different factors indicating the existence and development of musical concepts early in childhood?
- Do music preference ratings develop according to the open-earedness hypothesis?
- Do gender, migration background, personality, or social status influence music preferences at various times of measurement?

The qualitative part of the study explores explanations for the quantitative findings. Behne’s (1975; 1987) theoretical framework of musical concepts serves as a lens to analyse children’s musical and extra-musical associations with musical objects (e.g., music genres) and their evaluations of them. Interview analyses focus on the following questions:

- Which musical concepts can be found among elementary school children?
- Do these concepts develop during elementary school?
- To what extent are they relevant to children’s music preferences?
- How are musical concepts, music preferences, and identity development intertwined?

Quantitative Approach

Pupils (n=735) at 13 elementary schools in North Rhine-Westphalia and Hamburg answered questionnaires at four points of measurement (2009, 2010, 2011, 2012; for details see Lehmann-Wermser et al. 2014). Music preferences were investigated using a sound questionnaire based on earlier research on open-earedness (e.g., Gembris & Schellberg 2007; Kopiez & Lehmann 2008). The questionnaire (see Tables 1 and 2) features 16 (+1) instrumental music examples (conventional and unconventional) with identical durations (30 sec) and a medium tempo range (60 to 95 bpm). Three examples were adopted from previous studies to establish comparability of results. Four examples represent different music cultures (Turkey, Russia, China, and Africa), and one example (Garrett) provides a cross-over between classical and

⁴ SIGrun – Study of Instrumental Tuition in Elementary Schools (http://www.jeki-forschungsprogramm.de/forschungsprojekte/jedem-kind-ein-instrument/sigrun [08.11.2016]) was funded by the German Ministry of Education and Research (Bundesministerium für Bildung und Forschung) and conducted by the Universities of Bremen and Hamburg (2009 to 2013). The main goal was the evaluation of the programme JeKi – An Instrument for Every Child (cf. Lehmann-Wermser et al. 2014).
pop music. Additionally, eight pieces were especially composed to systematically combine the parameters style of composition, style of instrumentation, and presence or absence of a drum set (Table 2). The sound questionnaire was presented on an LCD player at a standardised volume and children rated their (dis-)like of each example on a five-point smiley scale ranging from very happy (1 = strong liking) to very angry (5 = strong disliking) icons.

<table>
<thead>
<tr>
<th>Music example</th>
<th>Composer/artist/album</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial example</td>
<td>Friedbert Kerschbaumer/ Die schönsten Kinderlieder auf der Panflöte</td>
<td>Ein Männlein steht im Walde</td>
<td>Children’s song played on acoustic guitar and panpipes</td>
</tr>
<tr>
<td>Africa</td>
<td>Magi Shamba/ Colors of Africa</td>
<td>Upepu</td>
<td>Interwoven patterns in steady metre played on different percussion instruments</td>
</tr>
<tr>
<td>Turkey</td>
<td>Sümer Ezgü/Ege Toslu Türkmen Türküleri (Anatolia Ethnic Music, Turkish Folk Music)</td>
<td>Ümmü</td>
<td>Folk tune with pronounced melody accompanied homorhythmically on traditional instruments</td>
</tr>
<tr>
<td>Russia</td>
<td>Samovar Russian Folk Music Ensemble/ Some of our Best</td>
<td>Şemşet</td>
<td>Folk tune with some expressive tempo variations played on traditional Russian instruments</td>
</tr>
<tr>
<td>China</td>
<td>Chinese Ensemble of Music and Folk Music/ Zhong Guo Dao Jiao Yin Le (Chinese Taoist Music)</td>
<td>Yu Fu Rong</td>
<td>Circular tune with steady metre played on traditional Chinese string and wind instruments</td>
</tr>
<tr>
<td>Garrett</td>
<td>Johann Sebastian Bach/ David Garrett/ Encore</td>
<td>3rd Orchestral Suite, Air</td>
<td>Baroque violin piece accompanied by popular instrumented orchestra including drum set</td>
</tr>
<tr>
<td>Mendelssohn</td>
<td>Felix Mendelssohn-Bartholdy</td>
<td>4th Symphony, 1st movement</td>
<td>Romantic orchestral passage dominated by constant short notes with melodic interplay between groups of instruments</td>
</tr>
<tr>
<td>Henze</td>
<td>Hans Werner Henze</td>
<td>3rd Symphony, 3rd movement, Beschworungstanz</td>
<td>Contemporary orchestral passage with increasing sound intensity and density and pronounced wind, string, and percussion instruments</td>
</tr>
<tr>
<td>Bach</td>
<td>Johann Sebastian Bach</td>
<td>3rd Orchestral Suite, Gavotte I</td>
<td>Baroque orchestral passage with pronounced metre and melodic interplay especially between string and wind/brass instruments</td>
</tr>
</tbody>
</table>

Eight examples composed by Achim Gieseler for this study (see Table 2)

Tab. 1: Music examples of the sound questionnaire (part I)
Statistical analyses investigated whether the theoretical construct of open-earedness could be operationalised via confirmatory factor models (Bollen 2002). The hierarchical structure of school-based data was taken into account by correcting the standard errors for complex samples (Muthén & Muthén 1998–2012). Model comparisons revealed that a solution with three factors (classical, pop, and ethnic/avant-garde music) was by far best suited to the data. The examples Russia, Cla-Cla D, and Pop-Cla were excluded from further analyses due to unclear factorial assignments (see Busch et al. 2014).

The results indicate that young children already distinguish between different styles of music in their aesthetic judgments. Further analyses showed significant gender differences: Boys rated all classical music examples significantly worse than other examples and far worse than girls. On the other hand, boys liked the music example by Henze better than girls. At grade four, the three-factor structure breaks down, indicating individualisation of music preferences by the end of elementary school.

Unexpectedly, apart from age and gender neither migration background nor social status nor personality significantly affected music preference ratings.

In sum, the quantitative approach revealed that (1) children’s preference ratings can be grouped according to broad stylistic categories even at an early age, (2) children start elementary school open-eared but show a decline in open-earedness for unconventional, but also for conventional music related to age, and (3) in addition to age, gender in combination with genre emerged as the most relevant variable influencing music preference ratings. The relation between gender, genre, and music preference might point towards music’s function in developing gender identity and will be investigated more closely in the following qualitative approach.
Qualitative Approach

A sub-sample of children with diverse music, family, and school backgrounds was interviewed in groups of up to four (same-sex and mixed) during school hours at two interview points (IP), first in second grade and again in fourth grade. Interview guidelines consisted of questions on music preferences, on two music examples (Pop-Pop D, Cla-Cla), and on music-specific gender stereotypes.

Musical concepts were categorised using techniques of structuring and summarising content analysis (Mayring 2010) resulting in a hierarchic classification (see Table 3). On the lower level, categories representing single musical concepts were named after the central musical object referred to (e.g., rock music, Turkish music). On the superordinate level, concepts were grouped by theoretical reasoning. A second category system contains music preferences for musicians, instruments, and musical parameters.

<table>
<thead>
<tr>
<th>Superordinate category</th>
<th>Musical concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genre</td>
<td>Rock; classical music; pop; rap; musical; opera; hip hop; jazz; Schlager; German Volksmusik; rock ’n’ roll; hard rock; oldies; ballads</td>
</tr>
<tr>
<td>Gender</td>
<td>Boys’ music; girls’ music</td>
</tr>
<tr>
<td>Thematic</td>
<td>Ballet music; film music; love songs; computer music; Christmas songs; rock songs; Halloween songs; Barbie music</td>
</tr>
<tr>
<td>Mood</td>
<td>Happy; sad music</td>
</tr>
<tr>
<td>Country or language</td>
<td>English; German; French; Turkish; Polish; Russian; Spanish; Portuguese</td>
</tr>
<tr>
<td>Musician</td>
<td>Michael Jackson; Peter Fox; Pur; Black Eyed Peas; Justin Bieber</td>
</tr>
<tr>
<td>Currentness/popularity</td>
<td>Chart music; old music</td>
</tr>
<tr>
<td>Age</td>
<td>Granny or grandpa music; children’s music</td>
</tr>
<tr>
<td>Institution</td>
<td>School music; JeKi music</td>
</tr>
</tbody>
</table>

Tab. 3: Categories and concepts of both interview points

Gender concepts and the concepts of chart music and rock music were most widely described by the children. At IP 1, many children differentiate between girls’ music and boys’ music, with concept characterisations being more evident in boys’ statements than in girls’. Nevertheless, their similar descriptions add up to a broadly consistent picture of the concepts being opposed to one another. Whereas girls’ music is characterised as quiet and associated with violin, cello, flute, and female vocals, boys’ music is most often

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5 IP 1: n = 31, 16 male, 16 female, 16 groups: 1 boys-only, 1 girls-only, 7 mixed; 18 to 30 minutes.

6 IP 2: n = 28 from IP 1, 14 male, 9 groups: 2 boys-only, 1 girls-only, 6 mixed; 33 to 40 minutes.
defined as incorporating electric guitar or rock guitar and drums, is characterized as *rock music*, *rocking*, and *loud*. These elements appear as the stereotypical core of gender concepts.

Contrary to this, at IP 2 girls in mixed interview groups either actively reject the existence of gender concepts or do not make any statements about them. In the ride-only context they are posed from a boys' perspective: *My brothers always think girls' music is when a woman sings* (IG E2, IP 2). Boys also rarely agree on the gender concepts at IP 2. Most strikingly, the strong association of *boys' music* and *rock music* found at IP 1 gives way to more discriminating descriptions at IP 2.

Turning to the question of how children use musical concepts in their preference descriptions it is noticeable that they hardly ever directly refer to gender. For instance, describing preferred or not-preferred music involves *manly* or indicating that music the other gender likes is explicitly not liked. However, at IP 1 gender differences are introduced quite often even before the interview question on boys' and girls' music. At IP 1 the relevance of gender concepts for children's music preferences becomes visible against the background of the strong association between *boys' music* and *rock music*. Characteristics of *rock music* are used frequently by boys to describe music preferences, but play a more distinct role at IP 1. Boys predominantly describe *rock music* and its characteristics as their preferred music, whereas girls use the concept less and mostly only as a follow-up to boys' positive evaluations. To express their music preferences, boys at IP 1 refer to *loud* and rhythmically accentuated music and instruments (drums, electric guitar), whereas girls also like *medium loud* or *quiet music* as played as cello and flute. Thus, although references to gender were rare and directly to express personal preferences, there is a tendency – more pronounced for boys – to state music preferences congruent with their own gender concept at IP 1.

However, descriptive statements like *Some girls also listen to boys' music or boys listen to girls' music* (IG C1, IP 1) can already be found at IP 1. These still appear at IP 2 and children now agree on the level that there are *no rules* (IG B1, IP 2) and *you can listen to whatever you like* (IG B1, IP 2). But in the boys-only groups, harsh rejections of music associated with girls still reveal strong connections between boys' music preferences and gender concepts: *I could kill myself right now if I hear that [Justin Bieber music]* (IG C1, IP 2).

Additionally, at IP 2 a new dimension becomes particularly relevant for music preferences: currentness/popularity. Analysed as the concept of *chart music*, descriptions incorporate elements like *modern*, *Top 100*, *the latest songs*, as well as certain radio stations. Noticeably, children did not reveal any special musical characteristics of *chart music* and in it is predominantly described and used by boys. Currentness and verbal music preferences appear to be closely associated: *Modern music is liked*, *old music is rejected*. Interestingly, *chart music* is distinguished from concepts for which hints had already been detected at IP 1 namely *old music* as well as age-oriented concepts of *granny*
or grandpa music and children’s music. At IP 2 these concepts appear as counter horizons to chart music.

Chart music adds a new discrimination line that can be discussed in terms of identity construction: A child’s own preferred music is distinguished from other music in terms of its currentness and additionally from music associated with other age groups. In some instances school music, as music heard and learned about in school, is associated with old music and opposed to chart music.

Triangulation of the Results
Following a “complementary model of triangulation” (Erzberger & Kelle 2003, p. 469) results of the quantitative and the qualitative approach were reviewed in relation to each other with the following results:

- Children’s music preferences can be statistically modelled with the three factors classical, pop, and ethnic/avant-garde music. This indicates that pupils at the beginning of school have already acquired musical concepts for different musical styles and genres, which they use in aesthetic judgements of musical examples.
- Open-earedness can mainly be predicted by age, but additionally by gender and music genre, which appear closely related to musical concepts.
- The expected decline of open-earedness during elementary school can generally be confirmed, though only in grades one to three and also for the pop examples.
- The dissolution of the factor structure in grade four coincides with the dissolution of the strong link between boys’ music and rock music and points towards the development of more discriminating and individualised music preferences.
- In grade four a new concept of chart music emerged and served as a reference point for preference statements. The pop examples lack characteristics of chart music as they were especially composed for the study and thus unknown to the children, which explains the unexpected decline of the pop ratings.
- Right from grade one, classical music examples displayed a strong boy-biased peer-group effect (Schurig 2012). Classical examples lack the typical instruments of rock music preferred by boys. Furthermore, classical instruments are associated with girls’ music and thus boys’ rejection of classical music helps them to distinguish themselves from girls in order to develop their gender identity.
- In grade four a new normative awareness hinders the verbal designation of certain kinds of music as specific for boys or girls in mixed-gender interview groups, whereas harsh rejections of girls’ music occurred in boys-only groups.
Summing up, the multi-method approach suggests that boys especially use music preferences for individual and social functions in identity development. These findings are in accordance with research on general development of standardised gender behaviour, which points towards a more pronounced fixation on the stereotypes of male and female in boys compared to girls (Maccoby 2000; Ruble, Martin, & Berenbaum 2006; cf. Beutler-Prahm 2012).

Outlook: Empirical, Theoretical, and Educational Implications

The results of the study indicate that the use of music for psychological functions already begins in elementary school and thus earlier than suggested so far (cf. Behne 1997; Baacke 1993). Musical concepts were shown to help understanding of the use of music especially in identity development. Behne’s (1986, p. 19) assumption that “preferences should be describable as a function of functions that music can have” was supported and differentiated by Schäfer & Sedlmeier (2009) who described music’s function in identity development as most important. Musical concepts can be interpreted as the background against which this connection between musical preferences and identity evolves. Behne (1987) argues that musical concepts especially can be changed and changed by listening experiences that contradict existing concepts, and thus musical concepts might be seen not only as a premise of music education efforts, but also as a possible target.

These results pose a challenge to music education: On the one hand, openness towards unconventional music is surely worth supporting. On the other hand, children should be encouraged to express individual music preferences and to make use of music’s potential in identity development and expression. So it seems as if music educators need to oscillate between maintaining open-earedness and encouraging the use of music for psychological functions. One could argue that these two goals are not necessarily contrasts, but can facilitate identity development in children. Engaging elementary school children into a variety of different musical styles might help them to give more informed aesthetic judgements and not to reject unconventional music categorically as the other. The music preferences of other children might also be more easily tolerated. Engaging in different musical styles will build up a rich fund of musical experience, which might enable children to look at alternative options for their musical behaviour and as a consequence expand the boundaries of their musical habitus. Rich music experiences will most probably help children to decide more precisely how to make use of music preferences to develop and express their personal and social identity. Thus, open-earedness and functionalisation of music deserve the same goal.

Why is music so important to humans? One answer might be that already in childhood, music serves as a means for fundamental psychological functions such as expressing...
and developing identity. Hence, it appears plausible that music will retain this importance for individuals during their lifetime. But all of these assumed benefits will only unfold if children’s musical experiences are of personal meaning to them. But how can music be taught in a meaningful way?

Research literature already offers different aspects that might be helpful in music education to enhance the personal meaning of music. Practical engagement in music classes will foster attentive and appreciative listening strategies and both appear promising for developing a positive and meaningful relation to music. Davidson, Hargreaves, & Miell (2009, p. 466) argue that encouragement and positive feedback (granted regardless of specific music performance) help to unfold a virtuous circle and at the same time hinder a vicious circle in the development of music identity. It might be helpful to focus on mastery-oriented behaviour with an internal locus of control (Dweck 2000) in order to enhance the certainty of pupils’ being able to master the given task (Bandura 1997). This could be achieved by offering children the opportunity to influence music instruction to a certain degree, for example, with regard to choosing the specific musical instrument or the specific piece of music to be played, listened to, or discussed. Some freedom of choice would also give children the opportunity to connect their music practice to their musical concepts, and thus to unfold meaning in their own reference systems gained primarily through listening experiences. For McPherson, Davidson, & Faulkner (2012) a positive learning environment and a large variety of learning options are the key to developing intellectual curiosity and emotional engagement, which are the basis of a lifelong interest in music. As enjoyment and having fun appear to be the most relevant predictors for such a long-term music involvement, integration of rather loosely structured activities with lots of improvisatory and creative elements are suggested (ibid.). According to Welch & McPherson (2012), the focus of music programmes should lie on expressive, affective, and communicative processes of musical interaction.

All these aspects lead to the conclusion that strengthening children’s music identity through educational efforts might result in opening up opportunities for using music in identity. In this way, music can be seen as an integral part of being human, and consequently a right to music education exists (Bowman 2012).

References


Veronika Busch, Nicola Bunte, & Michael Schurig


I would like to invite you to close your eyes and open your ears to all the sounds that surround you right now. What do you hear? What is the quietest sound? What is the closest? What is the furthest away?

How often do we really stop and listen to our towns and cities, our places of work, our homes, or even the sounds of nature? The discipline of acoustic ecology asks us to consider our relationship to these sounds, their impact on society, how they change, and what we can do to improve our sonic environment. The term was created by R. Murray Schafer (b. 1933), a Canadian composer, teacher, and scholar. He suggests that we treat the sounds that make up our acoustic environment as a musical composition for which we are all responsible. This is a composition in which we are all “simultaneously its audience, its performers and its composers” (Schafer 1977, p. 205). He argues that we can only improve this composition by learning to listen, through developing an increased aural awareness, something that Schafer has worked for many years to introduce into schools. This chapter will introduce Schafer’s philosophy, which forms the basis of the study of acoustic ecology, and explore how his ideas have been applied in education.

The term soundscape (usually credited to Schafer) could be said to refer to “all of the sounds that reach our ears in a given moment” (Krause 2013, p. 26). It refers to the sonic environment, which can include actual environments or created sound environments such as musical compositions (Schafer 1977, p. 274). Schafer founded the World Soundscape Project (WSP) with colleagues at the Simon Fraser University near Vancouver in the early 1970s. The project was “devoted to the comparative study of the world soundscape”
A number of sonic environments were documented, such as a study of the Vancouver soundscape that involved sound level measurements, “soundscape recordings and the description of a range of sonic features” (Wrightson 2000, p. 10). This work was “primarily intended as educational and archival” to help develop awareness of soundscapes. However, a new style of electroacoustic music, called “soundscape composition” by the composer and early WSP member Barry Truax (b. 1947), also emerged from the WSP’s work (Truax 2002, p. 5). Schafer and his colleagues at the WSP were concerned with the connection of each unique soundscape to “place” and “time it exists in” through the combination of its special blend of voices, whether urban, rural, or natural” (Krause 2013, p. 27).

Acoustic ecology is by nature interdisciplinary because sound reaches into all aspects of life and the study of it “cannot help but touch all disciplines” (Westerkamp 2000, p. 4). In order to understand sound’s relationship to the environment and its effect on human life many different perspectives must be taken by the acoustic ecologist. The composer Hildegard Westerkamp (b. 1946), who was one of the leading figures in the WSP, has said that “listening forms the basis for all work in acoustic ecology” (ibid., p. 3) and for the WSP listening is central to an appreciation and understanding of the soundscape and therefore “for improving the orchestration of the soundscape” (Schafer 1977, p. 206). By this Schafer means making decisions regarding the types of sounds we want to preserve and those we want to eliminate (Westerkamp 2000, p. 4) through being openly attentive to whatever sounds are occurring.

Education has always played an important part in the WSP’s work, and listening exercises designed to open students’ ears and therefore develop awareness of their relationship with the sounds they usually play a central role in soundscape educational programmes. Before exploring some of the teaching methods used by the WSP, in particular in relation to listening exercises, it would be useful to outline some of the key features of Schafer’s philosophy in more detail.

R. Murray Schafer: Tuning the World

A key text in outlining the theory of acoustic ecology is Murray Schafer’s *The Soundscape: The Tuning of the World* (1977). In this book he brings together a number of concepts previously discussed in his publications released throughout the 1960s and 1970s. Central to his argument is the idea that human beings’ listening abilities have deteriorated due to the dominance of the visual in modern culture since the Renaissance as well as increased noise pollution. Schafer proposes that before the spread of the written word hearing was more vital than sight as knowledge was transmitted orally, but concern over issues such as noise pollution shows
that there is now a desire to regain clear hearing or what Schafer refers to as clairaudience (Schafer 1977, p. 11). Schafer states that the ear, unlike the eye, cannot be closed at will, as we do not possess ear lids. Therefore our only protection to the level of noise in modern society is to filter out many of the sounds around us (ibid.).

To aid the analysis of the soundscape Schafer identified significant features to enable categorisation of three particular types of sounds: keynote sounds, signals, and soundmarks (see Figure 1). Keynote sounds represent the background sounds that give a soundscape its fundamental tone in reference to the musical term that identifies the key of a composition. These sounds are ubiquitous but not always consciously heard and can have a “pervasive influence on our behavior and mood” (ibid., p. 9). Whereas keynote sounds occupy the background, signals are sounds that occur at the foreground of a soundscape. These might be, for example, sounds that act as warnings, such as bells or horns – sounds designed to attract attention. The third feature Schafer identified is that of the soundmark, derived from landmark. This is a sound that is unique and due to its qualities particularly regarded by the local community. These features emphasise the uniqueness of particular soundscapes, which contribute to the life of communities.

![Fig. 1: Main features of the soundscape as identified by Schafer](image)

However, as Schafer pointed out, the unique character of many soundscapes has been jeopardised by increasing noise pollution since the industrial revolution, resulting in what Schafer describes as lo-fi soundscapes (ibid., p. 43). In opposition to that, Schafer defines hi-fi soundscapes as follows: “The hi-fi soundscape is one in which discrete sounds can be heard clearly because of the low ambient noise level. The country is generally more hi-fi than the city; night more than day; ancient times more than modern” (ibid.).

One term closely associated with Schafer and explained in the book is that of schizophonia (ibid., p. 99). He first used the word in one of his early educational pamphlets The New Soundscapes, later reprinted in The Thinking Ear (Schafer 1986, p. 139). The term refers
to the way a sound can, since the technological developments of the twentieth century, be split from its original source through transmission or electrical reproduction. This is a new development, as Schafer points out, “Originally all sounds were originals” that uniquely happened in one time and place (ibid.). Its similarity to the word schizophrenia was deliberate as he wanted to convey “the same sense of aberration and drama” (ibid.). Schafer argues that this means that, “Modern life has been ventriloquised” (ibid., p. 140). "Schizophonia" creates a synthetic soundscape (Schafer 1977, p. 91) and significantly adds to the lo-fi soundscape. In this situation we can become disconnected from natural sounds and our environment.

When we lived in a more hi-fi rural environment, our ears were more attuned to our surroundings. “From the nearest details to the most distant horizon, the ears operated with seismographic delicacy” (ibid., p. 44). Ear cleaning: ear cleaning was, according to Schafer, we can begin to regain clear hearing, and education has always played a key role in this for the WSP.

The World Soundscape Project and Its Educational Aims: An Introduction to Schafer’s Teaching Methods

Central to the WSP’s ethos is a commitment to combine research, education, and composition. As described above, the foundation of Schafer’s philosophy was to note the dominance of the visual in society. In his experience of teaching he noticed that children’s listening skills were deteriorating (Wrightson 2001, p. 10). Therefore Schafer argued passionately that listening skills should be part of the national curriculum (ibid.). He stated that it is only through an appreciation of the sounds of our environment that the soundscape can be improved and that education from a young age plays an important role in this. “For many years I have been fighting for ear cleaning in schools to eliminate audiometry in factories. Clairaudience not ear muffs” (Schafer 1977, p. 4). Clairaudience means clear hearing which can be achieved by practising ear cleaning exercises (ibid., p. 272).

Ear cleaning exercises

Ear cleaning was the term Schafer used to describe the process of cleansing the ears necessary for the students to listen clearly to their environment. Of course, he did not intend a physical cleaning, but a regained sensitivity achieved through a series of listening exercises. Schafer shared many such exercises in educational booklets that he first published in the 1960s and which were later all presented in the collection The Thinking Ear. Schafer’s principal aim was to try to open the ears of the students to sounds that they had not noticed before (Schafer 1986, p. 46). His teaching approach usually involved participation. He argued that students could only learn about sound and music by making
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their own sounds and music (ibid.). The exercises often require the students to consider different qualities of sound, such as the nature of noise, silence, timbre, and rhythm. For example, in an assignment for students to carry out at home, the instructor, Schaefer, instructed, “Silence is elusive. Try to find it!” (ibid., p. 51). Or sometimes he asked students to list the sounds they could hear without talking. He observed that some of the younger students noticed very intimate sounds such as their breathing, heartbeat, and clothing, which older students failed to notice (ibid.). Some exercises he used in these situations encouraged students to consider whether there is such a thing as silence. After his famous visit to an anechoic chamber in 1951, John Cage, after his visit to an anechoic chamber in 1951, had concluded that absolute silence does not exist (Cage 1961). To help illustrate that there is always something to hear, Schaefer created activities such as passing a piece of paper around silently (Schaefer 1986, p. 51), which was designed to draw the students’ attention to the quietest sounds. Schaefer’s aims in the exercises he developed were often to either clean the ears, release creative energy, or both (ibid., p. 89), but this always involved engaging the students.

Some of the exercises Schaefer designed used only the human voice. He argued that we need to understand the link between the human voice and the ear and that these “must provide the standards in this discussion of the acoustical environment salubrious for human life” (ibid., p. 170). The ear has evolved to be particularly sensitive to the voice and the frequency range it inhabits. Therefore, any acoustic environment that is favourable to humans needs to account for this. The type of vocal exercises he devised in his 1960s pamphlets involved onomatopoeia, for example, “[u]sing only your voices, create a composition on the sounds of nature. Make your imitations as convincing as possible” (ibid., p. 176).

Another activity is to ask children to bring in interesting sounds to the class, which he warns can fluster the students. However, when they actually take part in the exercise it helps them to discover sounds around them by listening to them with new ears. He explained: “A boy brought a metal clacker. He said it was interesting because all his life he had been hearing it, but it was the first time he actually had ever been asked to listen to it” (ibid.).

Soundwalks

Another important exercise that Schaefer proposed for introducing into schools was sound-walking. Hildegard Westerkamp describes soundwalks as “any excursion whose main purpose is listening to the environment. It is exposing our ears to every sound around us no matter where we are” (Westerkamp 2001a). She uses soundwalks as part of soundscape.

1 In the anechoic chamber, which is a completely soundproof room, Cage said he could still hear two sounds. The engineer in charge told him that one was his nervous system and the other was his blood circulating. This led Cage to redefine silence as the absence of intended sounds or what happens when we stop paying attention or turn off our awareness (see Cage 1961 and Kostelanetz 1988).
workshops whereby participants are asked to focus on particular aspects such as the sounds of the body, nearby sounds, the quietest sounds, or something specific such as the wind and how many different sounds it creates. Schafer differentiated between two types of soundwalks, which are listed below:

1. A listening walk is simply a walk where the participants walk silently in silence.
2. A soundwalk explores the soundscape of a particular area but might also include: ear cleaning exercises, sound-making by the participants in order to explore the sounds of the environment and be aware of one’s own sounds, and a score, which might include a map that could draw the listener’s attention to unusual sounds or qualities such as pitch.

As John Levack Drever (Professor of Acoustic Ecology and Sound Art, University of London) notes, composers have long walked for inspiration – from Beethoven, Mahler, Satie to Cage. Cage’s famous silent piece 4’33” (1952) brings “fringe phenomena into the foreground” therefore “becoming foreground” (Drever 2009, p. 179). This is similar to Westerkamp’s definition of soundwalking, which calls for close attention to the sounds around us in order that quieter sounds may not be missed (Westerkamp 2001a). It was through the WSP that soundwalking became fully established not only as a compositional tool but also a pedagogical one (Drever 2009, p. 188). As Westerkamp observes, participating in a soundwalk without talking is a rare opportunity to be in the world and students often find the experience inspirational (Westerkamp 2011, p. 13). In the City Voices festival that took place in Wiesbaden, Germany in 1999, 200 students took part in a mass soundwalk through the city. Lena Dietze, who teaches acoustic ecology in German schools, noticed how one participant who at first had been sceptical was won over by the experience: “I heard sounds I had never heard before. I paid special attention to car noises, for example, or bird songs. I paid special attention to certain things. I thought it was awesome. I never experienced anything like this before” (quoted in Dietze 2000, p. 20).

Dietze also observed that talking about the experience afterwards with the other participants could increase awareness of the sound environment (ibid., p. 21). This is also something acknowledged by Westerkamp from her experiences of organising soundwalks (Westerkamp 2006). Such discussions are open and can often involve participants’ reflections on both the shared experience of listening with others balanced by their own personal interpretations of sounds (ibid.). Soundwalking is an activity that invites participation, can help us learn about our relationship with our environment, or as Westerkamp points out “can simply be fun” (Westerkamp 2001a). Most importantly it makes listening the priority providing: “a temporal and spatial frame for our ears to be open in the everyday, and open to the everyday, yet with a reverence of concert hall listening […] a social art form that calls for active participation

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[...] and to quote Cage everyone is in the "best seat" (Drever 2005). For this reason, it is still frequently used in soundscape-related educational programmes. Examples of some of these are given in the following section.

Recent Examples of Using Soundscape Approaches in Educational Initiatives
Schafer's ideas on education are still very influential as evidenced by a themed edition of Soundscape: The Journal of Acoustic Ecology in 2001 that includes a number of examples where Schafer's techniques are still being used successfully today.

Michael Cumberland, a teacher in Canada, describes the value of these techniques in developing listening skills after using them with a wide range of age groups from elementary to high school level (Cumberland 2001). One ear cleaning exercise that Cumberland describes is that of making sound lists, when the children are asked to listen for one minute and then make individual lists of what they heard. When doing such exercises Cumberland always encourages children to provide as much detail as possible; for example, he will ask how many times a sound happened during the minute's listening and when. He even turns it into a collaborative exercise as the children then make an overall list of all the sounds that were heard. By having many ears working together in this way provides a more detailed account of the acoustic environment. This represents the starting point of the listening training and from here more detailed listening lists are made in other locations and on a soundwalk. Cumberland also asks the children to categorise the sounds, for example, as technological or natural, discrete or continuous, and to convert them into symbols on sound graphs. This can be a rewarding exercise for both pupils and teacher, and as Cumberland acknowledges the results are always different as the soundscape is never the same (ibid.). The class then creates compositions made from vocal imitations of the soundscape, as described by Schafer in When Words Sing (Schafer 1986, p. 170). Cumberland argues that Schafer's teachings are understandable to a wide range of age groups, it suggests that they can be used by teachers with little musical training and equipment and still have a very positive effect on children's awareness of the soundscape (Cumberland 2001) and can enable them to engage creatively and musically with environmental sounds.

Another project described in the same issue concerns an initiative on the Isle of Lewis in the west coast of Scotland. The guiding aims of this project (conducted by Scotland-based sound artist Gregg Wagstaff) were to "describe and document the social, cultural and natural make up of the islands through their soundscape" in a process that would involve the local people (Wagstaff 2001, p. 30). As part of the project Wagstaff arranged a two-day workshop with children between the ages of 8 and 12 at a local elementary school in order to "engage the children in listening to and thinking about their soundscape" (ibid., his italics). He led the children in activities such as listening to recordings of different soundscapes from around the world and asked them to write down what they thought the
sounds were, where they thought the sounds were recorded, and how they made them feel. They also engaged in sound-mapping exercises in which they were asked to find a place to sit outside away from the other pupils. They then individually recorded on paper (in writing, drawing, or in any form of notation) all the sounds they could hear and the direction from which they were coming. Additionally, the children were asked to keep sound diaries and write a piece of poetry about sound.2 Below is an excerpt from a 10-year-old pupil’s sound diary that Wagstaff provides as an example:

“Bus grunts and snorts starting on our run home. Choir sings high then low, words coming to life in tune, makes me sleepy. Pencil squeaks over paper, desperate to remove a stain. I feel frustrated hearing it. ‘Whirr’ – the ball swings round. ‘Crack’ – the ball hits the bat. Happy. Radio sings over the whirring car engine, voices desperate to drown out the ‘vroom’. T.V. blasts endless voices, mindless.” (Ibid., p. 31)

Wagstaff also provides this piece of sound poetry (produced by another 10-year-old pupil):

“The whistle of the wind by my ear,
The wind blowing against the trees,
Trees ‘swish’. Sound is heard,
Forcing us back. Stop, you hard,
The wind pushing the seas,”
Moving clouds,
With the calm, comes silence.” (Ibid., p. 30)

This impressive piece of work demonstrates how such exercises can enable an imaginative exploration that engages children with their sound worlds in a creative way.

Also in the same issue, Robin McGinley outlined the Stockholm Soundscape Project which was run for 15-year-olds and encouraged them to keep sound journals for five days in which they were asked to identify and react to sounds they heard around them (McGinley 2001, p. 26). The project served the same purpose as the sound diaries used in Wagstaff’s project. The general aim was to raise the students’ awareness of their sound environments but also to encourage them to study contemporary experimental and electroacoustic music. The idea was simply to open up the students’ ears to the sounds around them, they would become more willing to listen to these types of music: “If you can encourage people to listen to everything, they can listen to anything” (ibid., p. 29, emphasis in original).

2 Schaefer believes that the practice of keeping a sound diary can be an important tool for developing as an acoustic ecologist, as it enables one to note differences and variations in sound over time and in different locations (Schaefer 1977, p. 211).
One recent soundscape initiative was part of the Soundscape and Cultural Sustain-
ability Project that had its origins in WSP research led by Schafer in 1975. This project had
originally studied the soundscapes of five villages in different parts of Europe. One of the
aims of the WSP has always been to document how soundscapes change over time and
Schafer has always emphasised the evolving nature of soundscapes in his educational
projects. Therefore, in 2000 a comparative study was made of these villages to analyse how the soundscapes had evolved. In 2011, Dollar in Scotland and Cembra in Italy were
visited again to present the findings of these studies to the local communities. On this
occasion school pupils were also invited to produce their own views on the Dollar sound-
scape, which can still be seen as part of a blog on the Dollar Soundscape website (Dollar Soundscape 2011). Activities conducted with school children involved “Sound Pre-
ference Tests” in which they were asked to fill out forms to show the sounds they liked or
disliked in Dollar. Also, children aged 7 and 8 took part in soundwalks during which they
made and recorded sounds from crisp packets, railings, and plastic bottles which were
then posted on the blog. This project was heavily influenced by the original research of
the WSP, but the scope was expanded to include community and educational initiatives
to encourage local people to learn about their soundscapes and how they have changed
(Uimonen 2011).

These examples demonstrate that young people can connect with their acoustic
environments in ways that give them a fresh perspective on the influence of sound in their
lives, which in turn might help them to engage with unfamiliar forms of music. In
many of these examples the projects involve creative engagement with the soundscape,
and this can be particularly effective for learning about and listening to the soundscape
when it involves soundscape composition.

**Soundscape Composition and Listening**

Soundscape composition (a term coined by Barry Truax) began as a practice in the 1970s
and was formally conducted by the WSP. Early compositions were recordings of
soundscapes with the main intention of documenting them and representing them to
the listener. An early example of this is the recordings made of the Vancouver soundscapethat were released in 1973. However, later in the 1970s compositions started to involve
the transformation of sounds using studio processing. Truax suggests that one of the
most notable characteristics of soundscape composition is that most of the pieces “can
be placed on a continuum between what might be called ‘found sound’ and ‘abstracted’
approaches” (Truax 2002, p. 6). This continuum can result in a diversity of works ranging
from those which are analogous to real-world experience to those that might involve
associations with memories and dreams (ibid., p. 12). Despite this, according to Truax
soundscape compositions always retain a degree of recognisability in the sounds used.
Truax explains that soundscape pieces can encourage listeners to concentrate on and explore sounds in more depth, hearing them differently from in everyday life (Truax 2002). This could be because they are heard in isolation, removed from everyday experience within the context of a composition or also because they are manipulated in some way to emphasise a particular characteristic. The Canadian soundwalk artist Andra McCartney points out that Hildegard Westerkamp “aims to sensitize listeners to sounds of the environment around them, and to bring attention to small sounds that are often unnoticed” by amplifying them or juxtaposing them with processed versions (McCartney 2002, p. 45).

Westerkamp believes that listening itself is integral to soundscape composition, and that regular listening practice will benefit the composer by deepening the relationship with the acoustic environment (Westerkamp 2002). Westerkamp underscores the role of listening, not only for the composer but also for the audience, in the success of such works:

“The listener also plays a role in this process – how can the listener’s ears give birth to a piece? One can assume for audiences listening to such compositions that the experience of conscious soundscape listening in daily life would add significantly to the understanding of and involvement with a soundscape composition.” (Ibid., p. 56)

The aspects of soundscape composition that relate to memories or feelings connected to a particular place can be used to help engage children in educational contexts. This is demonstrated by a project run by Savage & Challis (2001) with schoolchildren from Suffolk in England. Soundscape approaches were used to help the pupils create compositions that related to their feelings and experiences of Dunwich, a small village on the Suffolk coast. The pupils were required to produce musical responses to various environmental stimuli (e.g., photographs, images, and writing that related to Dunwich and its past) as well as the pupils’ own memories of the Suffolk coast. These responses involved producing vocal sounds and using environmental recordings that the pupils could manipulate using sound processing devices.

Savage and Challis argue that one pedagogical value of acoustic ecology is that by appropriately incorporating technology, music education can be “democratised”, while at the same time the pupils’ environmental awareness can be raised. They emphasise the role of engagement in this, as they argue it can successfully engage the children “meaningfully with life itself” (ibid., p. 38).

The Dunwich project is a good example of an educational initiative influenced by soundscape compositional practice as soundscape composition puts an emphasis on the local context or place. This is explicitly highlighted by the founders of the WSP, such as Schafer (1977) and Westerkamp (1999). Capturing a sense of place is often key to these types of works, and practitioners such as the British sound recordist and composer Chris Watson (b. 1952) view this as an important part of their work (Hollings 2010, p. 53). In many of their pieces composers such as Watson and Jacob Kirkegaard are not trying to capture
the soundscape exactly as it is experienced by human beings, like a "sonic photograph" (Montgomery 2009, p. 146). Using technology, they often show us what we cannot hear (ibid., p. 161) by putting microphones in places that our ears cannot go (for example, Watson has recorded the sound of ice in an Icelandic glacier). However, Truax has more recently placed a particular emphasis on works made in locations that are known to the audience, which therefore require composers to engage in deeper engagement with particular social, cultural, and environmental contexts, and to think about what needs to be said about them (Truax 2012, p. 200), therefore giving them particular meaning and relevance to that audience. This, too, can be an engaging aspect of educational initiatives in which the students use recordings of their own acoustic environments to make soundscape compositions or sound installations related to place.

Many composers connected to the soundscape tradition advocate a type of listening that uses the imagination through memories and associations triggered by sounds. Sound has powerful properties in this regard. For example, hearing sounds from the past can sometimes bring the whole "context back to life" (Truax 2001, p. 29). Some composers try to guide the listener towards this type of reflection, as in Westerkamp's Kits Beach Soundwalk. Westerkamp draws the listener into the tinkling and crackling of the barnacles as a way of shifting the listener's perspective from the source to the inner world of the sounds and "to stimulate the imagination" (Kolber 2002, p. 42). Westerkamp argues that listening is a creative act and that soundscape compositions can create "a place of balance between inner and outer worlds, reality and imagination" (Westerkamp 1999).

Developing imaginative listening practice as a prerequisite for composition can be used as part of educational initiatives. My own research (see Heightened Listening: A Creative Tool for Opening Ears and Minds to Sound-Based Music in this book) has involved encouraging children to reflect on their responses to sounds, to consider how sounds resonate with their own experiences, and to use this to create themes or narratives to help structure compositions. Gregg Wagstaff's project (described earlier) involved children on the Isle of Lewis writing their own sound poetry, which entailed reflection on the sounds of their environment. This type of imaginative listening could be a useful pedagogical tool for helping children to engage with sounds creatively. It can be the beginning of listening to the environment not just as a composer and can be used as a foundation for helping students develop ideas for soundscape compositions.

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3 A sound installation will often be site-specific and will include sounds or compositions (usually looped) that relate to ideas or themes that the artist is trying to communicate. Sound installations sometimes include an interactive element, and one is able to move around the space in which it is situated for as long as one chooses.
Conclusion

Many educators who used Schafer’s exercises in the past and still use them today will argue that the benefits of developing listening skills and sonic awareness go beyond a knowledge and appreciation of the soundscape. The philosophy of Schafer encourages educators to have a perspective on sound that combines the aesthetic and the ecological. His view is in accordance with Cage who said in a letter to Schafer “Music is sounds, sounds around us whether we’re in or out of concert halls” (Schafer 1986, p. 94). Similarly, Schafer (1977) presents the whole soundscape as a composition that we all play a part in. Therefore, the act of listening to the world around us is a creative one that can have implications that go far beyond the boundaries of music education. For this reason study of the soundscape is by nature interdisciplinary, involving any discipline (e.g., acoustics and psychoacoustics as well as psychology, sociology and architecture) that can help us to understand our relationship to sound in the environments in which we live.

Westerkamp (2001b) has asked what the result would be if soundscape listening and acoustic ecology were made part of all sound-related disciplines. For example, what would be the impact on buildings in the future if architecture students were asked to analyse the acoustic environments of buildings in the same way as a music student analyses a composition? Or what “if schoolteachers and principals were trained to create school soundscapes conducive to learning” (ibid., p. 3)? Educators have acknowledged the profound effect that listening training can have on children and themselves as teachers, namely that a new “respect for everything and everybody that is heard” (ibid., p. 4) can emerge. In Westerkamp’s view, this type of practice can result in children developing “a more conscious relationship with the environment and society” (ibid.), which is a laudable outcome of an educational programme.

In the digital internet age Schafer’s approaches to education are more valuable than ever, at a time when many teachers claim attention spans are shrinking (see Purcell et al. 2012). Listening training of this type, which raises general sonic awareness, might well improve listening to and appreciation of all types of music. Indeed, Schafer argues that such ear cleaning is crucial for all music:

“Before we train a surgeon to perform delicate operations we first ask him to get into the habit of washing his hands. Ears also perform delicate operations, and therefore ear cleanliness is an important prerequisite for all music listening and music making.” (Schafer 1986, p. 46)
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