

Trauma, Sound Judgement, and the Music History Classroom

Music and sound have a profusion of positive impacts on trauma, offering knowledge, healing, solace, redress, and community. I want to stress my belief and investment in these beneficial aspects, aspects I suspect everyone at this conference has experienced. Yet music and sound's role in healing or comfort is not my focus today. Rather, I'd like to consider the power of music and sound *as traumatic agents*.¹ None of us intentionally weaponize music or sound in our classrooms, but harm can still occur, no matter the intent. So today I'd like to ponder a few specific connections between music, sound, and trauma, then offer some initial ideas about best practices for music and sound in our history classrooms (and I look forward to a collaborative discussion from all the fabulous pedagogues gathered in this space).

First, as context: sound and trauma intertwine in particularly consequential ways. Over 100 years ago, psychologists such as Pierre Janet observed the rich sensory context—images, odors, bodily sensations, and **sounds**—of traumatic memories.² More recently, Resmaa Menakem's beautiful work in *My Grandmother's Hands* reminds us that trauma is not an emotional response but something that “always happens in the body.”³ Trauma disrupts temporalities: through past experiences we revisit in the present, through memory, and through what Marianne Hirsch has discussed as “intergenerational acts of transfer.”⁴ Thus, as wordless, sensory, embodied knowledge, as a disruptive force straining against certain epistemologies—trauma seems profoundly *akin* to sound. Moreover, there are complex reactive relationships between sound and certain kinds of trauma. [I want to stress here that individual experiences vary, and that diagnostic words have a contentious history and lived experience for people with trauma, just as they do with disability]. Researchers in several disciplines have noted that certain

kinds of trauma *can* intensify reactions to changes in sound, or in certain instances lead to “fear of sound (phonophobia), aversion to specific sounds (misophonia), and a difficulty in tolerance and volume of sounds (hyperacusis).”⁵ Tinnitus also has manifold relationships with trauma, including mutually reinforcing hyperarousal systems and somatic distress that have been observed in both veterans with PTSD and traumatized refugees⁶—and I might note that not only does tinnitus impact about 10% of the population in general, it has some specific ramifications for musicians.⁷ Thus, as music scholars and teachers, we may already and always be living in a space that rubs against trauma—in fact, we may be especially suited to consider these relationships, but it is also imperative that we tread cautiously, with knowledge and care, when we use music or sound in our classrooms, precisely *because* of sound’s unique relationships with trauma. [And I might reiterate Jill’s aforementioned statistic that 2/3 of students entering U.S. universities have experienced some sort of trauma—so we know students and faculty with trauma are in our classrooms every day].

Do We Have Any Guidance?

Having established the need for thought about the use of sound and music in relation to trauma, we might wonder whether about national guidance on these issues from entities such as the National Association of Schools of Music (NASM). NASM and the Performing Arts Medicine Association (PAMA) *have* issued several jointly authored documents on neuromusculoskeletal health and vocal health for musicians—namely, “Neuromusculoskeletal and Vocal Health” (2014) and “Hearing Health” (2011).⁸ These publications are voluntary/advisory—not required standards or procedures for NASM accreditation—and some information is clearly focused on mitigating liability.⁹ The documents are notable for their specific focus: the hearing health document, for example, is largely concerned with “noise-induced hearing loss”

within performance and rehearsal spaces, whereas the neuromusculoskeletal document centers on *performance* as opposed to other musicking. Both documents do note that being able to “apply health knowledge in specific musical contexts, such as practice, performance, production, education, competition, and listening” is a basic requirement for all music professionals.¹⁰ Trauma is only mentioned as a synonym to physical injury, and mental health noted in four places, including as an intrinsic, modifiable “risk factor” for neuromusculoskeletal injury and within recommendations for protecting oneself from injury.¹¹ Thus, while the mandate seems clear—NASM calls attention to the relationship between music and people, notes a concern for integrity and well-being, and argues music faculty should forge safe spaces for both self and students—the dearth of attention to particulars is striking.¹² So: let’s talk more about listening in addition to performance, more about classrooms in addition to practice rooms or ensemble rooms, more about trauma beyond hurt fingers, and more about hearing and listening beyond the concept of “loss.” NASM should lead in this area, and as music history professors, we can speak up about trauma, hearing, and listening *all over* our music buildings.

Yet we don’t approach this work without collaborators—so I’d like to mention two preexistent frameworks that can help us with teaching music & sound in a way sensitive to trauma. The first comes from disability studies, particularly how each of us have “differing sensory processing mechanisms” and that the sensory impact of music and sound can both under/overwhelm listeners (hyper or hypo sensitive).¹³ Creating classroom environments where listeners can engage with their sensory preferences links up with disability justice’s concept of collective access—that “we all have access needs that function differently depending on context and environment.”¹⁴ We might also collaborate with other arts organizations—including ongoing

initiatives from symphony orchestras or musical theater organizations—in order to develop consistent best practices about music, sound, and sensory-friendly environments.¹⁵ The second is the essential work done by trauma-informed pedagogy more broadly, including work by scholars such as Janice Corello, who lead the way with a focus on techniques to emphasize safety, stability, dependability, collaboration, and empowerment by traumatized students—the question is how we can tailor these techniques to the specifics of music & sound.

Thinking about Sound Judgement in the Music History Classroom

For the rest of my time, I'd like to take a couple initial steps towards thinking through a series of “best practices”—or a trauma-informed approach to music/sound in the music history classroom. I've grouped these according to timing: techniques for the **beginning** of the semester (syllabi statements; group discussion about music & sound's roles in healing and trauma; creating avenues for individual students to have non-judgmental, confidential discussions with you about sensory processing concerns or trauma triggers; vocalizing classroom policies that foreground opportunities to disengage, do alternative work, stim, etc & reminding students that they are not beholden to “sit/stay/be quiet/etc”); to those that are **ongoing** throughout the semester, including mechanisms for recurrent feedback to disclose changing access needs; to work that extends **beyond** the semester schedule, such as advocacy work with NASM, working with colleagues from other disciplines to discuss best practices, or partnerships with arts organizations. While I'm happy to discuss any part of this, I'd like to call attention to 3 specific points (highlighted in purple). First: I've been contemplating a practice of what I've been calling “consensual listening” (riffing a bit on Pauline Oliveros)—how do we find ways of developing classroom listening as a collaborative, consensual, subjective, informed and WILLING practice?¹⁶ There are logistical hurdles here, but we could, for example, provide a list of musical

examples ahead of time, giving students time to note any concerns about particular examples.

What else?

Second: how can we adapt content warnings to reflect specifically musical/sonic content?¹⁷ Some of this is relatively straightforward—certain sound effects are acknowledged as potentially upsetting; gun shots, for example, are usually announced as part of theater or opera productions. Some podcasts utilize SFX: <warning> for common sound triggers (and debate about content warnings on Spotify has been a bit *weird* this spring).¹⁸ But the question about how to create “content” warnings for music is trickier (and invokes a whole host of old arguments about what and how music represents). Online crowdsourced projects have seemed to focus primarily on lyrics—how else can we think through this? Our imperative is clear, since it is commonly accepted that video and audio can be more intensely upsetting than text alone.¹⁹

Third: I’ve included several considerations of the classroom environment when playing music or sound. Among these, I’ve been reflecting on extremely cautious approaches to encouraging students to listen with their eyes closed—it is well established that in certain kinds of trauma eye closure is a clear stressor that increases arousal and stress and can prompt “intrusive images” (I do want to note the special role of the eyes here, since under specific trained techniques such as EDMR, eye movement can also have a therapeutic effect on trauma).²⁰ I’ve been contemplating similarly cautious approaches to light and other stimuli modifications. In general, I am thinking about what mechanisms we *can* control for lessening potentially traumatizing environmental factors when playing music.

All of this raises many questions about practices and process, but as noted, the imperative is clear—we should take care with how we deploy music and sound in our classrooms.

¹ Among many others, see J. Martin Daughtry's discussion of sounds "as a profound source of trauma." *Listening to War*, 5.

² Janet, "Histoire d'une idée fixe," 126.

³ Menakem, *My Grandmother's Hands*, 7.

⁴ On trauma, "postmemory" and intergenerational transmission, see Hirsch, *The Generation of Postmemory*.

⁵ <https://www.ptsduk.org/hyperacusis-and-ptsd/> The PTSD website notes that hyperacusis can result from problems/damage to the brain's central auditory processing center, perhaps brain amplifying signals too much. They note these are often sounds that do not seem loud to others. High frequency sounds can be particularly difficult. Sounds can also of course be linked to previous trauma more directly as triggers.

⁶ See Devon E. Hinton, Dara Chhean and Vuth Pich, Stefan. G. Hofmann and David H. Barlow, "Tinnitus Among Cambodian Refugees: Relationship to PTSD Severity." *International Society for Traumatic Stress Studies* 19, no. 4 (August 2006): 541-546. The authors note that tinnitus is an arousal-reactive symptom, something made worse by anxiety. They found 50% of their interviewees had current tinnitus. Among patients with PTSD, 75% had tinnitus, whereas 15.9% had it among the non-PTSD patients. Among the tinnitus patients, the tinnitus was severe, and most patients had severe flashbacks where the event recalled had been marked by prominent tinnitus. There were often catastrophic cultural cognitions in the tinnitus patients. Tinnitus related flashbacks and catastrophic cognitions each contributed to the prediction of CAPS (trauma) severity. They found the following: (a) tinnitus- associated trauma recall and catastrophic cognitions predicted PTSD severity beyond a measure of tinnitus severity; and (b) after addition of tinnitus-associated trauma recall and catastrophic cognitions, tinnitus severity's contribution to the prediction of CAPS severity dropped to nonsignificance. Further supporting the model, the events recalled in flashbacks were almost always marked by strong tinnitus, and the assessed catastrophic cognitions specifically involved tinnitus-related fears. somatic symptom-related distress is associated with PTSD severity, and that somatic symptom-related distress worsens PTSD by specific mechanisms

See also Marc A. Fagelson, "The Association between Tinnitus and Posttraumatic Stress Disorder." *American Journal of Audiology* 1 Dec 2007. Similarities between the way PTSD and tinnitus influence auditory behaviors include exaggerated startle responses and decreased loudness tolerance. Tinnitus loudness is often exacerbated by sounds that trigger PTSD-related anxiety. This report addresses physical and psychological relations between PTSD and tinnitus."

Fogelson's study concluded: "Chart review confirmed that 34% of the first 300 patients enrolled in the VAMC Tinnitus Clinic also carried a diagnosis of PTSD. Patient reports citing tinnitus severity, suddenness of tinnitus onset, sound-tolerance problems, and sound-triggered exacerbation of tinnitus were more common for patients with a PTSD diagnosis than patients with tinnitus only.

Conclusions: Several neural mechanisms linked to both tinnitus and PTSD affect auditory behaviors. Audiologists should be aware that patients with tinnitus and PTSD will require test protocols and referrals that address these powerful responses." I am grateful to my student Danny Neri for drawing my attention to this source!

⁷ Finally, see also: “Aberrant brain response after auditory deviance in PTSD compared to trauma controls: An EEG study” by Katrin A. Bangel, Susanne van Buschbach, Dirk J. A. Smit, Ali Mazaheri & Miranda Olff in Scientific Reports. Published online November 29 2017 doi:10.1038/s41598-017-16669-8. “What we found was that patients who had developed PTSD showed enhanced brain responses to deviant tones, suggesting their brain over-processed any change in the environment.” Reported in “People with PTSD React Differently to Certain Sounds.” <https://neurosciencenews.com/sound-ptsd-8069/> and https://journals.lww.com/thehearingjournal/Fulltext/2013/01001/PTSD_plus_Tinnitus_Make_Everyday_Noise_Tough_to.3.aspx

ImagesThe Hearing Journal: January 2013 - Volume 66 - Issue 1 - doi: 10.1097/01.HJ.0000425799.26569.f

When Marc Fagelson, PhD, a professor of audiology at East Tennessee State University, noticed that some of his tinnitus patients rated themselves as more troubled by the condition than others, he completed an extensive chart review. These patients all had one thing in common: post-traumatic stress disorder (PTSD).

“The first inkling I had that there might be some kind of relation came from clinical experience observing the patients I saw in the VA clinic,” Dr. Fagelson said. “The ones who had PTSD almost invariably were more bothered by their tinnitus than the patients who didn’t.” Interactions between a person’s psychological state and tinnitus are known to exist with respect to depression, anxiety, obsessive-compulsive disorder, and a variety of other conditions. What makes the connection between tinnitus and PTSD special is the presence of overlapping neurological associations. “Many of the same neurological mechanisms that appear to be influenced by PTSD are also implicated in levels of tinnitus annoyance,” Dr. Fagelson said. “Those neural mechanisms would include the limbic system and chronic autonomic nervous system hyperarousal. This strongly suggested that there was a potential for these two conditions to be mutually reinforcing.” A tinnitus patient’s case history often will provide hints of potential PTSD in undiagnosed patients. “It’s pretty typical to ask, on a number scale from 1-10, how bad is your tinnitus,” Dr. Fagelson said. “How loud is it? How severe do you think it is? Then if you ask them the same question about their ability to tolerate everyday sounds, a lot of these patients will actually indicate that listening to a variety of everyday sounds is more disturbing than listening to their tinnitus.” Data from Dr. Fagelson’s research suggest that patients with PTSD and tinnitus rate the loudness of their tinnitus in a manner that is consistent with those who have tinnitus without PTSD. When tinnitus patients with PTSD are asked about tolerance of everyday sounds, they rate the severity of these sounds higher—7 or 8 out of 10—than tinnitus patients not suffering from a psychological condition or other comorbidity.

⁸ NASM, founded in 1924, is an organization of schools, conservatories, colleges and universities with approximately 640 accredited institutional members. It establishes national standards for undergraduate and graduate degrees and other credentials and is the national music accrediting agency. NASM also provides information to potential students and parents, consultations, statistical information, professional development, and policy analysis. PAMA, founded in 1989, is an organization composed of dedicated medical and health professionals, artists, educators, and administrators with the common goal of improving the healthcare of the performing artist. PAMA members are professionals in fields that include research, education, and clinical practice, and who hail from all corners of the globe.

They define neuromusculoskeletal as “nervous system, muscular system, and skeletal system.” They define further as: “the term “neuromusculoskeletal” expands upon “musculoskeletal” to include the nervous system. The nervous system coordinates voluntary and involuntary actions and transmits signals to different parts of the body. The nervous system is comprised of the central nervous system (CNS) and the peripheral nervous system (PNS). The central nervous system includes brain and spinal cord. The peripheral nervous system is made up primarily of nerves, which allow the central nervous system to communicate with the rest of the body.” Basic Information on Neuromusculoskeletal and Vocal Health Information and Recommendations for Administrators and Faculty in Schools of Music, NASM and PAMA, p. 8.

⁹ Notes the information is “generic, presentational, and advisory in character,” not meant to substitute for medical advice, and “does not serve as the basis for the accreditation function of NASM or as an addition to the accreditation standards and procedures of NASM.” Basic Information on Neuromusculoskeletal and Vocal Health Information and Recommendations for Administrators and Faculty in Schools of Music, NASM and PAMA, p. 4. Liability concerns are sprinkled throughout, but see: “All such public information is intended to reflect positively on the field of music, the value of music study, and the quality of the institution's music program. Music schools and departments cost money. Constant expenditure justification is usually necessary. Justification includes maintaining an accurate and positive image about music and music study. Performance is a major indicator of achievement and value in most academic settings. The future of a college- or university-based music program depends on external belief in its value and on its ability to bring credit to the institution as a whole. Music is in jeopardy if it is viewed as a real or potential liability.” Or “Information about any subject can be worded in ways that produce a variety of impressions and effects on individuals and groups. For example, the message, “Music produces neuromusculoskeletal and vocal disorders” denigrates music generically. The underlying theme is negative toward music itself and to any encounter with it. In contrast, the message, “Enjoy playing music and singing in ways that support your neuromusculoskeletal and vocal health” lifts music and neuromusculoskeletal and vocal health into a positive relationship.” This is emphasized further on the following two pages, including disclaimers.” Basic Information on Neuromusculoskeletal and Vocal Health Information and Recommendations for Administrators and Faculty in Schools of Music, NASM and PAMA, p. 23. 24-25.

¹⁰ See: One particular type of hearing loss is often permanent: hearing loss due to noise exposure. Scientifically, this is referred to as noise-induced hearing loss or NIHL. NIHL is largely preventable. The hearing system can be injured not only by a loud blast or explosion but also by prolonged exposure to high decibel levels of sound. Music of any type and source at high volume that exceeds daily exposure levels and time periods is dangerous. Over time, NIHL can be the result. Preventative measures need to be taken by individual musicians and by institutions where musicians study and work. Preventative measures include but are not limited to information, applications of information in decision-making and culture building, and acoustically appropriate performance and rehearsal spaces. The issue is serious. NIHL is widespread. Statistics vary, but 50 percent of musicians may have problems with hearing loss to some degree.” Basic Information on Hearing Health: Information and Recommendations for Administrators and Faculty in Schools of Music – NASM/PAMA: November 2011, p. 6. The document DOES address MP3 players.

See, for example, p. 7 of “Basic Information on Neuromusculoskeletal and Vocal Health Information and Recommendations for Administrators and Faculty in Schools of Music” which details the following: **Musical performance** is a physical activity that involves movements both big and small, those we can see and those inside the body. **Musical performance** involves the conscious positioning of the body into specified playing and/or singing postures, some of which may seem unnatural at first. A musician’s practice routine is often physically demanding and time-intensive. For serious musicians, especially those studying, singing, and playing music at advanced levels, “days off” are few and far between. Some musicians, at some point in their careers, may develop one or more neuromusculoskeletal conditions, complications, or disorders related to their engagement in musical activities. Decisions about **practice and performance** play an important part in the neuromusculoskeletal health of musicians, but numerous factors contribute to an individual’s neuromusculoskeletal fitness. Musicians are responsible for their art form, and for supporting the well-being of other musicians. Cultivating the most positive personal and professional relationships between **musical performance and neuromusculoskeletal health** is part of that responsibility.

A slightly more holistic discussion is aimed at addressing the complexity of decision making for administrators: “Music schools and departments are focused on **music itself, on making, teaching, studying, and otherwise working with music**. This focus is not possible without constant attention to the relationship between music and people and a concern for the integrity of that relationship. In the academic setting, the artistic and academic development and the well-being of students are especially important. Many institutions have the highest artistic aspirations in one or more types of performance. They teach performance, organize to present performances, and maintain spaces for rehearsal and performance... Neuromusculoskeletal health is part of a bigger picture that includes relationships among music, people, students, artistic aspirations, performances, justification, image, and sustainability.” Basic Information on Neuromusculoskeletal and Vocal Health

Information and Recommendations for Administrators and Faculty in Schools of Music, NASM and PAMA, p. 18. Similar biases appear in the 3 points about individual and individual responsibility: Information about this relationship needs to be provided as broadly as possible to the musically involved of all ages. Individuals and organizations that teach and perform music need to pursue their work in ways that support neuromusculoskeletal and vocal health. Rehearsal and performance considerations need to support neuromusculoskeletal and vocal health objectives.” Basic Information on Neuromusculoskeletal and Vocal Health

Information and Recommendations for Administrators and Faculty in Schools of Music, NASM and PAMA, p. 18. Music faculty are encouraged to “With respect to neuromusculoskeletal and vocal health issues, these may include but are not limited to developing and maintaining a teaching and student practice environment that, to the extent possible, is safe for both self and students within classrooms, studios, rehearsal halls, and concert venues, and informing students and the public about preventative measures related to neuromusculoskeletal and vocal health.” Basic Information on Neuromusculoskeletal and Vocal Health

Information and Recommendations for Administrators and Faculty in Schools of Music, NASM and PAMA, p. 20. Listening is mentioned twice in the document, as as basic that music professionals need to know and be able to do: music faculty: “apply health knowledge in specific musical contexts, such as practice, performance, production, education, competition, and listening.” Basic Information on Neuromusculoskeletal and Vocal Health Information and Recommendations for Administrators and Faculty in Schools of Music, NASM and PAMA, p. 17, and 28. See also Basic Information on Hearing Health: Information and Recommendations for Administrators and Faculty in Schools of Music – NASM/PAMA: November 2011, p. 15.

¹¹ Trauma is mentioned on p. 6 (“The various neuromusculoskeletal and vocal disorders that affect musicians have many varied contributing factors. Some may be genetic in nature or result from an infection. Others may be the result of trauma or injury.”), p. 8 (“The causes and contributing factors of neuromusculoskeletal disorders vary, but they generally fall into the one of the following categories: (1) genetic or related to a pre-existing medical condition, (2) trauma- or injury-related, (3) behavior-related. Common symptoms of neuromusculoskeletal disorders include pain, stiffness, aching, throbbing, cramping, and muscle weakness. Some disorders may be permanent, while others may be temporary”); on p. 22 (Medical Researchers – Research the many causes (genetic or preexisting, trauma-induced, behavior-related) of neuromusculoskeletal and voice disorders).

The documents also relate to “mental health” in the following specific instances: #1—as an intrinsic, modifiable “risk factor” for neuromusculoskeletal injury: “Stress and psychological health. Musicians, like anyone else, are more susceptible to injuries, pain, etc. when under stress and/or depressed. Many of the neuromusculoskeletal problems for which musicians are at risk can, if they become chronic, contribute to a situation that may lead to depression. It is important for musicians to recognize the importance of their psychological health as a part of their overall physical health;” #2—regarding phonatory instability for vocal health, “Short-term causes of phonatory instability include fatigue, certain medications, drug use, and anxiety. These problems tend to resolve rapidly with removal of the cause, but remain if the causative agent fails to be eliminated. Over-the-counter allergy medications, antidepressants, and highly caffeinated drinks, which stimulate the nervous system, can cause vocal tremors, a form of phonatory instability;” #3—recommendations as basic protections for musicians, out of 9 recommendations, 3 mention things somewhat related to mental health, “Avoiding excessive practice time and stress. Set daily limits, and vary repertoire during practice sessions. and Maintaining good “mental hygiene.” This includes getting adequate sleep, good nutrition, regular exercise, and spending time with friends and family. Refrain from hazardous or recreational drug use. Seek the help of a mental health professional when appropriate. and Allowing for relaxation. Injuries are much less likely to occur in persons who are both physically and psychologically fit. Stress management is as important as practice management.” #4—the basic definition of what a psychiatrist and psychologist does (including medical research). Basic Information on Neuromusculoskeletal and Vocal Health Information and Recommendations for Administrators and Faculty in Schools of Music, NASM and PAMA, p. 11, 14-15, 15, 21-22,

¹² See Basic Information on Neuromusculoskeletal and Vocal Health Information and Recommendations for Administrators and Faculty in Schools of Music, NASM and PAMA, p. 18 and Basic Information on Hearing Health: Information and Recommendations for Administrators and Faculty in Schools of Music – NASM/PAMA: November 2011, p. 16.

¹³ Amongst copious literature, see Erin Felepchuk on reclaiming stimming as improvisatory practice: “Stimming is an embodied, repetitive, and sensory practice with which many autistic and other neurodivergent people engage. Medical culture constrains stimming through strict clinical designations and pathologizing definitions, referring to it as stereotypes or “self-stimulatory behaviours.” Autistic people, however, often define stimming more broadly as repetitive sensory practices used to regulate emotional states, to cope with external sensory stimuli, or for purposes of self-expression. The word stimming is frequently used by the autistic community and is reclaimed from the medical term “self-stimulatory behaviours.” Similar practices exist among other neurotypes, including people with Attention Deficit Hyperactivity Disorder (ADHD) or Fetal Alcohol Spectrum Disorder (FASD). However, in many cases, these repetitive practices are referred to as fidgeting. It is also important to note that neurotypical people sometimes stim as well—many will chew on their pens, or shake their legs. These behaviours offer examples of stimming but are free from the pathologizing gaze of the medical establishment. In this paper I argue that stimming as an improvisatory practice drives embodied cultural expressions highlighting autistic aesthetics and sensory preferences.”

Intriguingly, Felepchuk also notes how much of “stimming is often discussed by both autistics and non-autistics through the vocabulary of music and sound,” including silencing of deviant bodies, of “loud hands” as stimming acceptance, etc.

Felepchuk, “Stimming, Improvisation, and COVID-19: (Re)negotiating Autistic Sensory Regulation During a Pandemic.” *Disability Studies Quarterly* Sept 2021 <https://dsq-sds.org/article/view/8426>

This page also has a great explanation of “sensory diet” and “fulfilling sensory needs and improving self-regulation with a specific selection of sensory activities. . . . The term sensory diet originated in the occupational therapy field and is commonly used in relation to both autism and sensory processing disorder. To create a sensory diet, an occupational therapist looks at a person’s areas of sensory hypo- and hyper-reactivity and comes up with ways to help up-regulate or down-regulate them.” <https://dsq-sds.org/article/view/8426/6201>

¹⁴ See SinsInvalid 10 Principles of Disability Justice. <https://www.sinsinvalid.org/blog/10-principles-of-disability-justice> and https://static1.squarespace.com/static/5bed3674f8370ad8c02efd9a/t/5f1f0783916d8a179c46126d/1595869064521/10_Principles_of_DJ-2ndEd.pdf

¹⁵ Some of the mechanisms used in sensory friendly environments include: lower volumes, relaxed lighting, trained staff, ability to move around, designated quiet areas, access to preparation materials. These are to some degree designed for listeners with autism, but also other groups: people of all ages, sometimes children. I thank my student Emma Matusovich for her illuminating research on sensory friendly performances by symphonies and music theater organizations—thank you Emma for your discussion and information!

For the Lion King performance in Seattle, some changes included: To prepare for this special event, STG sent all attendees a downloadable Social Story—a social learning tool for children with autism to prepare for social encounters.

The story included pictures of the theater and the production of the show to help individuals and families prepare. This included a Character Guide with photos and information about cast members, as well as a guide for attending the show to help reduce the anxieties of visiting a new space.

Sitting still and quiet can be hard for an autistic child or adult, so at the theatre, guests were greeted with activity zones and fidget items upon entering. There were quiet spaces with noise-canceling headphones and break areas staffed by autism specialists for anyone needing to leave their seat during the show. The production crew adjusted the lighting and sound, and guests were allowed to have food and drinks in their seats. From the moment guests entered the theatre, they were made to feel welcome and comfortable.

While the tickets to this show were significantly reduced to as low as \$15 to make it more accessible for all families, through Premera's sponsorship of the show, we were able to invite Premera members to attend at no cost to them. Invitations were sent to Microsoft and Amazon employees who utilize their Applied Behavior Analysis (ABA) therapy benefits. About 250 of our members were able to attend.

¹⁶ See discussion of community-raising and consensual listening in, among others, Martha Mockus's *Sounding Out: Pauline Oliver's and Lesbian Musicality*.

See also: To answer the question – what is the sound? – means a shift from hearing, to listening. Oliveros reminds us, “scientists can measure what is happening in the ear,” because the ear acts like a transducer, picking up vibrations from the environment. But “listening is another matter,” as it “involves subjectivity.” Simply, listening involves the conscious interpretation of what we hear; when we listen, we understand. To understand, there must be a “consensual agreement on the interpretation of soundwaves delivered to the ears.” For human beings, “languages are such agreements” (Oliveros 2015). From “listening, or, a study of sound between indigeneity and diaspora” on <https://studyofsound.wordpress.com>

¹⁷ There is of course a long history of “explicit content” warnings placed on recordings, but those have a much different impetus and goal.

¹⁸ <https://www.rollingstone.com/music/music-news/spotify-content-advisory-podcast-joe-rogan-neil-young-1292626/> and <https://www.makeuseof.com/why-spotify-content-warnings-for-podcasts-arent-good-enough/>

¹⁹ This interesting resource tries to unpack the inconsistencies in content warnings across countries and format types, and to create a typology. They note: There is no inter-sectoral consensus or widely used typology of content warnings. Incompatible frameworks have been developed, driven by the perceived need for different uses and in different legal and geographical jurisdictions. One reason for differences in content warning is the un-coordinated development of frameworks across different sectors. Each sector contains different assumptions, so for example in the arts sector provocation caused by displayed materials is valued and intended [11], with content warnings primarily giving information so individuals can make their own choices about exposure. By contrast, in the health sector the biomedical ethical imperative of non-maleficence [12] places more responsibility on the health professional to actively reduce the likelihood of triggering trauma responses in people with experience of PTSD. Hence, the content warnings in arts spaces tend to be more focussed on information, whereas those in a health context contain less information to avoid the content warning itself being triggering.

Charles A, Hare-Duke L, Nudds H, Franklin D, Llewellyn-Beardsley J, Rennick- Egglestone S, et al. (2022) Typology of content warnings and trigger warnings: Systematic review. PLoS ONE 17(5): e0266722. <https://doi.org/10.1371/journal.pone.0266722> 4 May 2022.

²⁰ Eye closure was specifically selected as the variable used to prompt stress reactions in PTSD subjects in this research study, which noted: “Furthermore, eye closure was selected as a stressor, because it would interfere with hypervigilance, a specific PTSD symptom. Hypervigilance is a state of continuous monitoring of the environment for potential threat and misinterpretation or excessive reaction to threatening and neutral stimuli (Richards, Benson, Donnelly, & Hadwin, 2014). Many individuals with PTSD, and war veterans in particular, are characterized by increased hypervigilance (Kimble, Fleming, & Bennion, 2013). During eye closure, veterans with PTSD cannot scan the environment, leading to stress due to the uncontrollability of their surroundings. Eye closure also enhances visualization, in general, and PTSD patients report more vivid and emotional memories during eye closure (Hembree, Rauch, & Foa, 2003; Vredeveltdt, Hitch, & Baddeley, 2011). Thus, eye closure can be threatening for PTSD patients due to the disrupted scanning of the environment and the anticipation of intrusive images. Moreover, anxiety is related to increased postural sway after sensory manipulations such as eye closure and standing on foam (Stins et al., 2009). A recent study showed that PTSD patients exhibited reduced freezing (i.e., the absence of body sway and heart rate reductions) in response to unpleasant versus neutral and pleasant pictures compared to healthy controls (Fragkaki et al., submitted). Therefore, we expect that PTSD patients will show increased postural instability relative to controls due to increased arousal associated with eye closure.” See Fragkaki, Iro et al. “Tonic immobility differentiates stress responses in PTSD.” *Brain and behavior* vol. 6,11 e00546. 23 Sep. 2016, doi:10.1002/brb3.546

In terms of therapeutic uses, there is a large body of research (both for and against) involving the use of eye movement desensitization and reprocessing (EMDR), which uses rapid eye movement during traumatic recall as a desensitization technique. For a quick primer, see <https://www.webmd.com/mental-health/emdr-what-is-it>