

# State of Mind

Music is not just sound. Dr Harry Witchel explains how music can be perceived in different ways, and that by understanding its power it can be channelled as a positive force for change

Music is a special kind of sound. It can reduce pain, improve sleeping patterns, lower anxiety levels and elevate mood. While many medical journal articles have suggested that music's therapeutic powers are due to its ability to act as a distraction, scientific experiments comparing music to genuine auditory distractions like white noise have shown that music can achieve more than a distraction.

The qualities of music as a stimulant were tested in a study entitled: 'Effect of distractive auditory stimuli on exercise tolerance in patients with chronic obstructive pulmonary disease (COPD)', where lung patients with breathing difficulties were asked to pedal an exercise bicycle for as long as possible. The study found that playing music resulted in a higher exercise tolerance compared

to silence, as well as less subjective unpleasantness. However, when patients were asked to do the same exercise with a non-musical auditory distraction such as grey noise, the distracting noise did decrease the subjective unpleasantness, but did not increase the amount of exercise done.

The implication is that music has qualitatively different effects from pure

distraction. That is to say, although distractions may decrease your discomfort, listening to music will make you stronger.

The increase in exercise tolerance is also commonly ascribed to music's ability to change our mood or alleviate pain. When running a marathon, you can't take a break for hours on end, and your legs are in almost unendurable pain. Music may seem like a good way to deal with this, but Jennifer Goebel was disqualified from winning the 2009 Lakefront Marathon in Milwaukee because she was wearing an iPod. It was not an act of random boredom, because she only wore the iPod while running from mile 19 to mile 21. She said: "I wasn't going to put the music on unless I thought I needed it." Goebel observed: "If you're bored, it pumps you up a little bit. Sometimes, on a long training run, I'll bring it along for the last half hour. When I run marathons sometimes I carry it and never put it on."

While surveys indicate that many people deliberately use music to change their moods, commercial establishments can play music to create a leisurely pace conducive to shopping and examining merchandise. Studies have shown that the speed at which people move around a shopping mall can be modulated by the tempo of the music played — music with a slower tempo is associated with slower in-store traffic flow and a greater total sales volume than music with a faster tempo.

In 1986, the same scientists found that diners in a Texan restaurant could be made to eat more slowly or quickly by adjusting the tempo of the background music played — music with a fast tempo was associated with a faster turnover of tables, whereas slower music engendered slower eating and more spending at the bar. The simplest explanation for how music can change how much exercise you can do or

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how fast you eat is that the regular rhythms found in music allow people to entrain to its tempo.

#### **Music defines social territory**

The effects of music are not unceasingly positive. One person's music can be another person's noise. Music is used by humans to reinforce social territory. When music has such a territorial effect, it can engender a sense of belonging and empowerment. This social territory created by music is much more than a place — it is a state of mind. Those who choose and want the music feel confident, calm, resolute and strong. By contrast, people subjected to unwanted music will feel bored, irritated, anxious or weak.



An extreme example of this was played out during the Iraq war. American soldiers of the 82nd Airborne pumped out AC/DC's 'Hell's Bells' and Metallica's 'Enter Sandman' in Fallujah, Iraq, hoping to enervate the captured Sunni Muslim gunmen and break their resistance. Sergeant Mark Hadsell, of the US Psychological Operations Company explained that since the Iraqis have never heard heavy metal, "They can't take it. If you play it for 24 hours, your brain and body functions start to slide, your train of thought slows down and your will is broken. That's when we come in and talk to them." In stark contrast, playing the very same music to American soldiers only strengthens their determination to fight. Staff Sergeant Gerald explains, "The other day we sounded up our loud speakers and played some music for the marines to give them a morale boost". And what did they play? "Highway to Hell and Back In Black by AC/DC. We do take requests though." So, literally, one man's inspiration is another man's torture.

#### Silence – a communal starting point

Silence may be our common ground, but it is not necessarily a perfect soundscape, despite its preferment in libraries and on public transport. Silence is ideal for people

who do not want to be aware of their surroundings — for instance while sleeping. Similarly, when someone is using a computer or other electronic device on public transport, they can and will tune out their surroundings. Complete silence in most environments is quite rare, but, for most people, the majority of ambient sounds can be accepted or ignored. The exceptions (for a particular level of loudness) are those sounds that have particular salience, and consequently an ability to irritate; these annoying sounds are, in general, recognisably manmade.

Manmade sounds are the very sounds we most welcome when they are thought of as part of the environment we choose to inhabit or create. So long as sounds are not "too loud", our ability to control a sound makes it unlikely to be irritating. Uncontrollable sounds are more upsetting, especially human sounds. The classic example is of a mobile phone being used on a train, but a more subtle example is the sound of a toilet being used at three in the morning — which is typically more upsetting to a downstairs neighbour than to the person using the toilet.

#### Context and control

Having a sense of choice is one

determinant as to whether a sound is viewed as acceptable or a nuisance. However, the process of choosing can be indirect, and does not necessarily involve accepting the specific sound. For example, when non-Indians eat at an Indian restaurant, they will not have chosen the music, but they will have "bought in" to the Indian music because they chose to go to the Indian restaurant — and that music is part of the territory they have chosen to visit. By contrast, if the same Indian music was played at a different public environment, for example a clothing store, it could be viewed as odd and possibly disturbing.

Many good things can come from music. Now and in the past music was used to bond groups, creating unity and a sense of togetherness. These days in the West we think of music as a form of entertainment — many primitive cultures do not — which can create beauty and happiness. Within the most recent four decades, music has been employed to unify people toward a charitable goal, and alternative health specialists have found ways to use music therapeutically.

Many groups are experimenting with new

ways of using music, so in the future we are likely to find that music could be used deliberately to reduce crime and antisocial behaviour. It will likely have a more explicit role in mainstream health care. Music has a clear role to play in engaging people with their environment, and this may spread more generally to engagement with the environment, both at a noise pollution level and more general environmental stewardship.

Ultimately, sound is one of the fundamental cues that turns a space into a place, and by defining these places with the roles and activities that are appropriate within them, music will be used to nudge people toward where they belong.

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Dr. Harry Witchel's new book on music 'You Are What You Hear' was released in January. He is a Senior Lecturer in Physiology at Brighton and Sussex Medical School. For more information visit [harrywitchel.com](http://harrywitchel.com)