

Music and its mood-altering qualities

Watching a thriller wouldn't be the same without some tense music at the crucial moment, while a romantic meal would soon lose its appeal if accompanied by some heavy metal. Without a doubt music affects the way we feel and our bodies respond to the sounds that we hear. Shopping centres try to exploit this fact by playing music to encourage people to buy, or to keep the crowds moving, while therapists may use music as a medication for their patients. So what exactly happens when we listen to music and why is it that drum beats tend to cause excitement, while the plucking of a harp is likely to soothe jangling nerves?

Dr Harry Witchel, a Senior Research Fellow from the Department of Physiology at Bristol University has been investigating the effect that music has on mood. He and his colleagues have been measuring physiological responses (like heart rate) while people listen to different kinds of music. Their results are beginning to reveal how music wields such strong power over our emotions.

Music has the ability to make you happy, amused, sad, fearful or perhaps just plain irritated. Occasionally a piece of music will send a shiver down your spine. But the interesting thing is that no two people have exactly the same feelings about the sounds that they hear. One person's happiness can be another person's vexation. And this provided one of the biggest experimental challenges for Witchel and his team. "We had a devil of a time finding pieces of music that almost everyone could agree on. Such pieces are fabulously rare," says Witchel.

After extensive tests on their subjects, music students at Bristol University, the scientists came up with five pieces of music that consistently triggered the same emotions with almost everyone who heard them. Happiness was 'I'm a believer' by The Monkeys; amusement was a short segment of banjo music from *Dueling Banjos* by Eric Weissburg and Steve Mandell; sadness was Barber's *Adagio* for strings; fear was Mussorgsky's 'A night on the bare mountain' and irritation was a solo violin being played very badly by a beginner. Each subject was also asked to send in five pieces from their own music collection that aroused the same collection of emotions.

Ninety-second fragments were taken from each piece and played to people through headphones. At the same time

Witchel and his colleagues wired people up and recorded skin resistance, breathing rate, blood pressure and heart rate changes. They found that just listening to the music, regardless of which piece it was, caused some dramatic changes. "People's breathing rate always became more regular and slow, while they listened," says Witchel. This is interpreted as a sign of attention and concentration. Meanwhile, when the music stopped the scientists observed a huge increase in one measure of heart rate variability. "It goes through the roof," says Witchel.

Heart rate variability is a measure of cardiac health. A healthy heart is continuously making small adjustments to keep the blood pressure even, whereas an unhealthy heart has very little variability. However, Witchel and his colleagues are not entirely sure why heart rate variability increases when people stop listening to music. "Possibly it is because they have stopped paying attention, or possibly it is because of the experiment and they are waiting and expecting to be asked lots of questions," he explains.

Interestingly there was no single piece of music that everyone responded to in the same way. Many people found Mussorgsky's 'A night on a bare mountain' a hair-raising piece and showed an increase in heart rate, but still some people remained unmoved. The importance of musical taste was further revealed when people listened to their own choices of music, rather than the prescribed pieces. "Most people tended to respond more strongly to their own music," says Witchel.

So where does our love of music come from and how do our preferences develop? One of the most popular theories at the moment is that mothers are responsible for our musical development. As we evolved away from our ape-like cousins, female humans started making special sounds to their babies such as lullabies and, as a result, humans gradually developed the ability to listen and respond to a variety of sounds. Alternatively music could date back to tribal days and the use of war-like drumming to bond a group of people. Or possibly it all boils down to sex: crooning the perfect notes gave people a greater chance of getting the mate they wanted.