

Beat Deafness

You've probably seen them at concerts (they can't clap to the beat of the music) or at dances (they can't dance to the rhythm of the music). These people may be beat deaf.

Beat deafness is a form of congenital amusia (the most well-known form of this condition is tone-deafness) characterized by a person's inability to feel musical rhythm or move in time to it. Generally, humans have the ability to hear musical beat and rhythm beginning in infancy.

Both beat deafness and tone deafness are derived from the same areas within the brain. People with tone deafness can recognize beat and can move in time to music, but they cannot perceive pitch. People with beat deafness on the other hand, can recognize and distinguish between different tones as well as the average person and can usually sing in tune, so musical pitch is not the issue. Different areas of the brain in the auditory cortex are involved in the perception of musical pitch and melody, and researchers theorize that tone deafness can potentially be from any of these sections.

Those with beat deafness are also unable to dance in step to any type of music. Even people who do not dance well can at least coordinate their movements to the song they are listening to, because they can easily keep time to the beat.

It is estimated that about 4% of people in Western Europe and North America are beat deaf. The first reported case was of a Canadian graduate student, whom researchers have identified as "Mathieu". Phillips-Silver et al. (2011) examined the human ability to recognize musical beat in a sample of individuals who had had no previous musical training in their lives. The researchers presented a series of songs from different genres and the participants were instructed to simply bounce up and down to the beat of the music. Results indicated that all participants except for Mathieu were able to move in sync with the beat of the music. The researchers also presented video clips which showed a person dancing to music. Mathieu could not identify when the person was or was not dancing in time to the music.

Recent research has shown that beat perception is not unique to humans. Even some animals such as parrots can detect beat and can dance to the beat of music. A research team led by Aniruddh D. Patel of The Neurosciences Institute concluded that Sulphur-crested Cockatoos have the ability to perceive the beat in music and are able to rhythmically move to the tempo of the music as it changes. Only vocal learning species such as dolphins and parrots are hypothesized to have the ability to perceive beat. This is because beat perception and movement rely on complex vocal learning which requires motor and auditory circuits in the brain. Vocal learning and beat perception do some overlapping in the parts of the brain that account auditory and motor areas. There is no significant evidence for beat perception in non-vocal learning species such as dogs and cats.

But those women in your Zumba class who insist on stepping right when everyone else is lunging left probably don't have a genetic excuse.