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Mind over muse? Is music more perspiration than inspiration?

McGill University psychology professor Daniel Levitin researches music, or more specifically, the mental processes involved in making and listening to music. He is tackling questions such as: Are genius and talent innate or learned? What makes absolute pitch so rare? Can tone-deafness be 'fixed'? How, if at all, do musical experts differ from non-experts?



Prof. Daniel Levitin

Some of his answers are surprising. "It's an understudied domain," he says. "The vast majority of people throughout the world spend a significant part of their lives listening to music. Surprisingly, little is known about the relevant underlying mental processes."

A former record producer, Dr. Levitin has interviewed musicians such as Eric Clapton, Stevie Wonder and Paul Simon. Participants in his controlled experiments include people with differing musical backgrounds – e.g., musicians, non-musicians – as well as individuals with absolute pitch, tone-deafness, and Williams Syndrome. (Williams Syndrome is a neuro-genetic developmental problem that somehow leaves the brain's capacity for dealing with music untouched and, therefore, offers important clues about brain function.)

NSERC is funding Dr. Levitin's work because, from a scientific standpoint, the study of amusia (tone deafness) can potentially provide us with a better understanding of the neuropsychology of auditory pattern processing and pattern memory, and an understanding of how music is organized in the brain.

Is musical genius/talent learned, taught or innate?

Why do people take piano lessons for ten years and go nowhere while others make it? Stevie Wonder and Paul Simon told Dr. Levitin that they believe everyone has the ability but that they got ahead because they worked harder. Eric Clapton believes he succeeded because he played guitar while others played cricket. Stevie Wonder goes further and states that he's been just plain lucky.

Dr. Levitin leans towards the idea that genius is most probably learned rather than innate. When presented with the world's most famous example of the infant-prodigy-as-genius, Wolfgang Mozart, Dr. Levitin points out that Mozart learned early from a brilliant teacher, his very own father. "You have to ask how significant this is." Dr. Levitin also asks whether successful musicians have a different brain set.

Absolute pitch

Only one in 10,000 people has it (i.e. they can identify or produce a note to order) whereas the ratio of people who can name colours is dramatically higher. On the road, Keith Richards employs a man with perfect pitch whose sole job is to keep his guitars tuned. New York's renowned Juilliard School of Music has tried to train people in perfect pitch but they can't. Because absolute pitch is a means of accurate recognition and identification of sound, the military – and particularly the navy – has always maintained a serious interest in its research.

Tone-deafness – a cure?

Much like colour-blindness, **tone-deafness** is frequently seen as an insurmountable handicap imposed by Nature. However, Dr. Levitin believes that it can be 'repaired'. He sees this as not so much a failure of perception, but a failure of coding that can be 'repaired' with focussed, short-term training.

Experts and non-experts – the ears are the same

Dr. Levitin is also testing the theory that musical experts and non-experts have more in common than has previously been thought. He believes that experts do not remember music in fundamentally different ways than non-experts, but they may have better linguistic labels for their perceptions and, therefore, be better at talking about what they hear.

Dr. Daniel Levitin earned his B.A. in Cognitive Psychology and Cognitive Science at Stanford University, and went on to earn his Ph.D. in Psychology from the University of Oregon,

researching complex auditory patterns and pattern processing in expert and non-expert populations. He has consulted on audio sound source separation for the U.S. Navy, and recently completed a two-year Post-Doctoral research position at Interval Research Corporation. He has taught at Stanford University for the past several years in the Department of Computer Science, the Program in Human-Computer Interaction, and the Departments of Psychology, Anthropology, Computer Music, and History of Science. Currently, he is Assistant Professor of Psychology at McGill University (Montreal, Quebec).

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