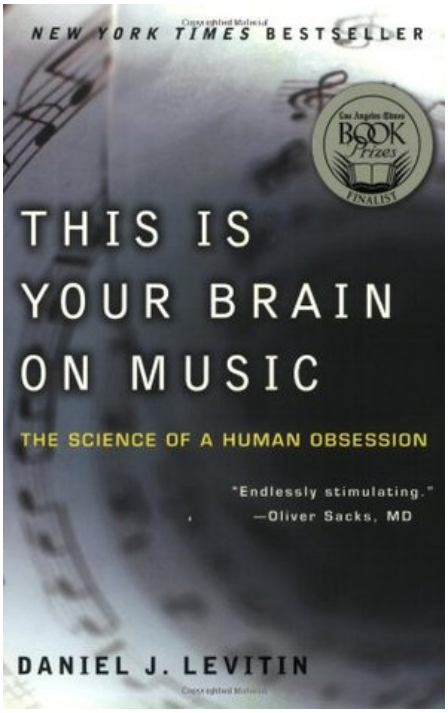


# This Is Your Brain on Music: The Science of a Human Obsession

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**This Is Your Brain on Music: The Science of a Human Obsession** Daniel J. Levitin
Whether you load your iPod with Bach or Bono, music has a significant role in your life—even if you never realized it. Why does music evoke such powerful moods? The answers are at last be- coming clear, thanks to revolutionary neuroscience and the emerging field of evolutionary psychology. Both a cutting-edge study and a tribute to the beauty of music itself, This Is Your Brain on Music unravels a host of mysteries that affect everything from pop culture to our understanding of human nature, including:
• Are our musical preferences shaped in utero?
• Is there a cutoff point for acquiring new tastes in music?
• What do PET scans and MRIs reveal about the brain's response to music?
• Is musical pleasure different from other kinds of pleasure?

This Is Your Brain on Music explores cultures in which singing is considered an essential human function, patients who have a rare disorder that prevents them from making sense of music, and scientists studying why two people may not have the same definition of pitch. At every turn, this provocative work unlocks deep secrets about how nature and nurture forge a uniquely human obsession.

## This Is Your Brain on Music: The Science of a Human Obsession Details

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# From Reader Review This Is Your Brain on Music: The Science of a Human Obsession for online ebook

### Pamela W says

I really despise myself for giving what should be an awesome book only 2 stars. I know I am mentally feeble, but was this ever dry!!! Interesting topic - neuroscience & music - but the author did go on at times (too much music theory, god I hated studying that and I'm a musician) and took the scientific aspects to a degree where I often found myself stopping to ponder "what the hell is he talking about?" It read like it could be someone's dissertation. The second half is slightly more interesting. I'm sure Oliver Sacks book re: dysfunctional psychological reactions/processing of music is going to be a more fun and interesting read, and let's face it, I am reading for fun, this is not a textbook for my evening class at The School of Rock. When I get to invite 4 people from history to a dinner party, I'll not invite Daniel Levitin; all the other guests will try to avoid him all night as he does go on and on (much like this review).

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### J says

Have you ever wondered how you can listen to an orchestra and pick out the melody, or pick out the violins from the whole ensemble, or pick out the first violin from the violin section, or separate the orchestra from the car alarm outside? If you ever wondered about music and why it is so appealing to us, you'll find this book interesting.

Beginning with the basics of how musicians and scientists define music, it moves on to discuss how our brain and mind have evolved to understand music, the impact that music has on all aspects of our nervous system, and the role music has played in unlocking the secrets of the brain. It gave me a new found appreciation for the human mind and its inner workings, especially with regard to something I've always taken for granted.

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### Orsolya says

We tend to make music for as much granted as we do breathing. Music is EVERYWHERE. The same way that you encounter hundreds of advertisements in a day: you also encounter music in various forms.This is Your Brain on Music (yes, based on the popular egg-drug PSA, explores how music is processed within your brain and why we react the way we do.

This journey within the musical brain begins with a brief description of music in terms of notes, patterns, tempo, etc. One can skip this section if already familiar or simply not interested. It won't hinder your understanding of the subsequent chapters. Levitin then dives into explaining such noteworthy topics as why we get songs stuck in our heads, why certain songs are equated with memories throughout our lives, and how our brain tends to know the next couple notes in a song even if we've never heard it before. All of these topics are augmented with thorough research and scientific explanations; yet, in a lamen's terms.

You don't have to be a musician to be interested in this read, you merely have to an inquiring person. If nothing else, you will learn facts which will impress your friends and perhaps win you that spot on your

favorite trivia game show. One thing is for certain: you will never look at music the same way again.

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### Bill says

Someone left this behind in the cubby of the plane seat on a flight I took in December. As I'd finished my magazines, I picked it up, and then couldn't put it down. What was most fascinating about the book was the ease at which concepts I'd struggled with years ago were made crisp, clear, and, well, obvious, as they should have been back then. Introductory concepts of music were never made as clear to me than from this. I don't think I could have found a fuller survey of the subject, tying it to subjects I'm interested in (math, cognition) if I'd looked, and there it was, for free.

Surely an expert or someone who'd learned more of music or neuroscience would find it basic, but I'd recommend it for a good catchup on the subject and how our understanding of it is changing.

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### Jessica says

People often ask me about how I can be a musician and into sign language. It occurs for them like there is a dichotomy at play. I've never experienced my work in either area to be at odds with the other.

This week I'm reading the coolest book I've read in a while: This is Your Brain on Music by Daniel J. Levitin. He was once a musician and sound engineer, but now is a neuroscientist (another set of odd-bedfellow occupations). A Publishers Weekly review says "This is likely the only book whose jacket sports blurbs from both Oliver Sacks and Stevie Wonder." In the past few days he has enlightened me to myriad fascinating aspects of my relationship to music, both as a musician and as a human being.

My favorite among these revelations thus far is the following passage, which validates my feeling that signing and singing aren't so different, despite their apparent disparity:

"Most astonishing was that the left-hemisphere regions that we found were active in tracking musical structure were the very same ones that are active when deaf people are communicating by sign language. This suggested that what we had identified in the brain wasn't a region hat simply processed whether a chord sequence was sensible, or whether a spoken sentence was sensible. We were now looking at a region that responded to sight--to the visual organization of words conveyed through American Sign Language.

We found evidence for the existence of a brain region that processes structure in general, when that structure is conveyed over time. Although the inputs to this region must have come from different neural population?and the outputs of it had to go through distinctive networks, there it was--a region that kept popping up in any task that involved organizing information over time."

Brains are neat, mine included.

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### WhatIReallyRead says

Two random facts about me:
1) I love music
2) I love cognitive and neuroscience

So I was thrilled about this book.

And it was indeed pretty good. My main takeaway from it is that **our enjoyment of music stems from the setting up and violation of expectations** and human's innate instinct to seek out patterns in whatever stimuli that comes our way.

I **recommend the audiobook version** because it provides musical examples of what the author is talking about, so I believe it's much more convenient to comprehend that the written version.

It took a while to finish because every time I started listening to the **book about music I got a massive urge to listen to some**. So I had to scratch that itch, and that kept me distracted from reading Brain on Music in big chunks.

It took a lot of set-up and some of the things described in this book I already knew, so they weren't as exciting, hence the 4 stars.

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### Ken says

This is one of those books that I think is a valuable read but not necessarily an enjoyable one..at least for the general reader. If you bring a background in neuroscience then this is a treasure chest of information. My personal interest lies in music specifically and I saw this as an opportunity to better understand how our brains engage with music. Coupled with Oliver Sacks collection "The Man Who Mistook His Wife for a Hat" we begin to unlock the mysterious properties of music to help us communicate/learn even when burdened with serious psychological disorders. Fascinating stuff. Levitin frequently lightens a very technical discussion with references to pop/jazz music but overall his analysis is complex and difficult to present in an easily readable format. It seems evident to me after reading both books that there is still much to be learned about the human brain, but music has a unique power to shape cultures and our minds in a way that other art forms cannot. Many of Levithans chapters are worth reading by themselves. For example, I found his writing on "What Makes a Musician" and why we are drawn to certain types of music (and remember certain songs) especially interesting.

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### Matthew says

There's a lot of amazing stuff in this book to contemplate, but the author tries too hard to make it relevant for readers who listen to the Eagles and Mariah Carey (musicians he specifically sites), and he gets caught up in the most mundane details of his personal interactions with his colleagues at meetings and dinners and such, and who ordered what, and how everybody was dressed, and where everybody got their degrees.

My girlfriend got me interested in it because I found her passionate explanations of the salient neuroscience

very interesting, but that information could be contained in a book about a quarter of the length of this one. Read it, because you don't have Stacey to give you the short version, and you'll love learning about how deeply and profoundly music affects human and animal brains, but do yourself a favor and skip a few paragraphs every time Levitin starts to ramble on with his personal anecdotes which usually pertain only very tangentially to the science at hand.

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### Nikki says

Despite loving singing, and having been good enough to perform and not have people run away, I know very little about music. Not that Levitin would be a snob about that, from the sound of this book, but it still forms a bit of a barrier to understanding when someone starts talking about semitones. I can sing C on demand, and I know when something is out of tune — what more do you want? (Although unlike most people, I have a bad sense of timing, apparently: I routinely sing slower than the original version of anything I'm performing. Most people apparently preserve the timing of the version they know best. Trivia!)

So anyway, the music side of this passed me by, mostly, despite the primer in the opening chapters. But the neuroscience behind music is fascinating, and Levitin explains it well. There are a few sections which drag as he spends too long explaining things, but on the other hand he references a wide selection of music, applying what he's talking about to songs people often know. (Which again led me to wishing I knew more music, but this time popular music — I think I got one out of every five references? And my acquaintance with Bowie is pretty darn recent.)

I feel like the best people to appreciate this have a bit more music theory and a bit less neuroscience in their background, but nonetheless, I found it an intriguing read.

Originally posted here.

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### Bruce says

In Daniel Levitin's own words, "This book is about the science of music, from the perspective of cognitive neuroscience…. I'll discuss some of the latest studies I and other researchers in our field have conducted on music, musical meaning, and musical pleasure…. [H]ow can we account for wide differences in musical preference -- why is it that one man's Mozart is another man's Madonna?" (p. 11) After reading these 270 pages, I'm sure I can't tell you. I'm pretty disappointed, but then I had really high expectations for this book which it failed to meet (I should know by now never to read the back-cover hype, let alone the 4 pages of promotional blurbs that preceded the table of contents).

But before confessing my own failings here, let me lay a little blame at the author's feet. Right off the bat, he states, "It's a shame that many people are intimidated by the jargon musicians, music theorists, and cognitive scientists throw around. There is specialized vocabulary in every field of inquiry (try to make sense of a full blood-analysis report from your doctor). But in the case of music, music experts and scientists could do a better job of making their work accessible. That is something I tried to accomplish in this book." (p. 10) Levitin also talks about harboring a preference for identifying *how* the brain interprets moving air molecules as music and the behavioral/emotional significance/origins of this auditory processing over simply mapping where in the brain music triggers neurons.

To that, I say, ha, ha, and double-ha. We take you live to a typical passage (p. 191), which begins as follows: "We found exactly what we had hoped. Listening to music caused a cascade of brain regions to become activated in a particular order: first, auditory cortex for initial processing of the components of the sound. Then the frontal regions, such as BA44 and BA47, that we had previously identified as being involved in processing musical structure and expectations. Finally, a network of regions -- the mesolimbic system -- involved in arousal, pleasure, and the transmission of opiods and the production fo dopamine, culminating in activation in the nucleus accumbens. And the cerebellum and basal ganglia were active throughout, presumably supporting the processing of rhythm and meter."

If you got that, this book is for you (but not me, alas). Levitin devotes the first 1/5 of this book to defining musical terms (tuning, timbre, scale) he will not really use later. It's interesting, but cognitively irrelevant. There is some fun anecdotal stuff buried in here (did you know that if you chop off the 'attack' of a piano from a recording and just play the body of the pitch, it sounds indistinguishable from a flute? did you know that music appreciation and sociability are closely correlated?), but the questions posed in the introduction are never answered. Is music a by-product of speech, etc. or a seminal human intuition? Ummm… not sure. How and when are music preferences established? Ummm… mostly from exposure during one's teens, but possibly also from that in the womb, early childhood, and later in life. Why? Don't know. Repetition, perhaps?

I give this book 2 stars for the extensive annotated bibliography at the end and (ironically, considering the author's stated subject matter preferences) the trivially-interesting pictographic brain mappings of music function in the appendix. What a bummer.

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### Jackie "the Librarian" says

A book is the wrong medium for this information. As I read this book, I kept wishing I was watching a PBS show version of it instead, where I could HEAR the music Mr. Levitin was referencing, and see visuals of the brain showing what parts are being affected by music, and how they all link up.

Instead of having to tell us in excruciating detail what an octave is, he could demonstrate on an instrument, and we could hear it for ourselves. When discussing half steps and whole steps, we could both hear them, and see how a piano's white and black keys work with the structure of the scale.

Beyond all that, I'm a little disappointed in the focus of the book. Mr. Levitin says at one point that he is more interested in the mind, than in the brain. And yet, instead of telling us how all these brain interactions manifest in our minds, he focuses on details about the cerebellum and the amygdala. We learn what parts of the brain act together when listening to music, but not much what that MEANS to us mentally. I guess I wanted more psychology, less biology.

That doesn't make the subject any less fascinating. I think my favorite chapter was the one on what makes a musician. It's not just innate talent. No, it takes hours and hours and hours of practice, 10,000 in fact to master an instrument (this may sound familiar to those of you who read Malcolm Gladwell's book *Outliers*). It may also take helpful physiology, like long fingers to reach keys on a piano easily. But humans are INNATELY musical, and how our brains and bodies react to music is astonishing.

Other interesting things I learned:

- humans have always made music, and that it likely predates language
- music can comfort and inspire us, and has the power to change our mood through the chemistry in our brains
- music activates both the oldest and newest parts of the brain
- we all have expertise in music, because we all listen to it
- the importance of timbre, the quality of sound that distinguishes a note played on a guitar from the same note played on a trumpet, and the quality that lets us recognize each other's voices

And I liked this quote: "Music communicates to us emotionally through systematic violations of expectations."

And I kept thinking of this other quote: "Writing about music is like dancing about architecture," (no, I can't tell you who said that, maybe Elvis Costello, maybe Laurie Anderson, maybe Steve Martin...)

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### Mike Bularz says

From the reviews I've seen here, the material seems to have passed over most people's heads (by being too rough, or the phrase you'll come across a few times, "I didn't feel like I walked away exclaiming 'eureka!'"... or the book angered more expert readers by its simplicity, but it wasn't meant to talk of new discoveries as much as it was meant for a general public.

The book takes a while for an average person, and I'd say you have to have some knowledge of chorded instruments and such where you'd come across ideas such as frequencies ringing together to form major and minor chords. It covers various interesting topics, and I speculate the reason people walk away feeling not so enlightened is because after chapter 8+, chapters 1-5 are a distant memory. If you have trouble, jot down a few things, it helped me.
There is one chapter that the author wastes time talking about a dinner with his idol neuro-scientists from which you will take not much away except for a list of forgettable names and how the next chapter's ideas were spurred by one of the professors' advice: "Look at the connections [something along those lines at least]".
Overall, Im glad I read this book, and often check back to it as a reference, and it's great food for thought.

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### Patricia says

It wasn't until I was half-way through this book that things started to get really interesting. As a musician, the first half was like retaking Music 101, but I felt this was a book I need to read, so I plowed on. I am looking for answers to the questions: "Why, when I near any musical interval, my brain automatically zips through all the tunes I know which start with that interval, and I start humming one of them?" and "Why the hell have I had '76 Trombones' on my mind for the last 6 weeks?" Is this what happens when musicians age? I feel like I'm nearing the answers, and its getting quite interesting. (I'm still reading the book). I finally finished the book and solved the mystery of "76 Trombones": it just so happened my cousin who lives on the East coast was playing trumpet in a production of "The Music Man" that telepathic experience had nothing to do with the book. As for the intervals reminding me of tunes, that has something to do with the Exemplar theory which has to do with how musical prototypes are stored in and recalled from memory. Pretty interesting

stuff, but I came away with the feeling that there is still not much scientific consensus about how the brain processes music. The book contained a lot of ambiguous "Probablys", and "somehows" and apart from a few interesting and compelling studies, I was ready to move on to something else.

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### Michael says

“A” for effort and ambition and “C” for execution. He tries to be all things to all people, bouncing too much from folksy to scholarly and from self-referential to didactic perspectives. Levitin has a substantial music background, both in performance and production, and a very productive track record in cognitive neuroscience. Thus, his personal ambition to account for the neural basis of music, music listening pleasure, and musical creativity is compelling to him, and that motivation is infectious enough to justify a reader eagerly grabbing the book up based on its title and blurb. Enquiring minds want to know. After hungrily penetrating 50 pages of so of the book, many readers are likely to feel duped. Progress on the target areas is accelerating, but it’s not that enlightening to the average reader. Yet, as Browning wrote, “A man’s reach should exceed his grasp, else what’s a heaven for.”

As a musical ignoramus, I appreciated the Music 101—I think I can finally grasp what a “key” and a “major chord” are. And I was enlightened by his perspectives on how expectation and violation of chord progressions has a lot to do with enjoyment of music. As a former neuroscientist, I appreciated the review of progress in the field. As one would expect, music engages both primitive emotional circuits and higher analytic systems involved in memory, temporal information processing and prediction. The overlap with language systems is interesting, and speculation on cerebellar involvement beyond motor performance was fascinating. That people with Wilson’s syndrome are good at music and empathy while those with Autism Spectrum Disorders are not provides some important food for thought. But the brain stuff I don’t believe helps anyone appreciate why music is so special to our human culture or is so pleasurable.

For this, he goes out of his field to summarize arguments against the notion that music is sort of an accident of evolution of cognitive skills with clear adaptive value. He quotes Pinker: “Music is auditory cheesecake…It just happens to tickle several important parts of the brain in a highly pleasurable way, as cheesecake tickles the palate.” In Gould’s architectural analogy, music is like “spandrels”, those elegant spaces between arches which were not invented for their own sake. Levitin assembles evidence for music prevalence in all current and past human cultures, its importance for social cohesion and courtship, and lands on the evolutionary psychology perspective that its adaptive value relates to sexual selection (i.e. musical skills conveyed reproductive advantages through mate selection).

For the discussion on heritability of music skills, I felt he was fairly even handed, leaving open that even Mozart’s genius may have benefited mostly from practice and environment in the nature/nuture perspective. Musical skill fits in with the larger ongoing question of genetic contributions to artistic creativity. A nice emphasis in this book is Levitin’s consideration of how even the average person qualifies as an expert and skilled listener and how our current division between performers and listeners represents a violation of the ancient traditions of all members of society participating in both.

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### Sam says

Seemingly for musicians or composers this book is more fitting a read for scientists and doctors. Not much content is musicianship related. Middle third is a bore.

What I learned:
- There is no sound in space
(there are no molecules to vibrate)
- Virtuosity comes from hours of practice
(talent and absolute pitch play a small role)
- Learning to play an instrument after 20 is hard
(the brain is done developing)
- Percussion is a primitive musical trait
(affirming my suspician drummers are apes)
- People like music they can understand
(an area between too elementary and too difficult)
- Children who learn to play instruments have increased cognitive understanding and focus
- Music and performance play a role in evolution
(used to attract a mate)
- Music is a stimulant and natural high
(it opens neural pathways that trigger throughout the brain from the cerebral cortext to the frontal lobes)
- Different handicaps react differently to music
(Down syndrome do not like music. Williams does)

I'll stop now. This list is already too long.