

Is there a subconscious cause for our love of music?

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A speculative essay proposing that the human subconscious mind can understand language but, while it can communicate with the sleeping mind via images in dreams, it can only communicate to an individual's awake mind via what appear to the individual as a random recall of a musical song in working memory. Remarkable lyrics of a given song can thus be used by the subconscious as a means to communicate to the awake mind. A theory of subconscious communication from Cormac McCarthy in his Kekule' Problem essay and the research of Jeff Hawkins and Numenta Corporation showing the human brain storing sequences of patterns including songs, are used to support the proposal.

*"Foremost among them, the fact that the very recent and "uniquely" human capability of near infinite expressive power arising through a combinatorial grammar is built on the foundations of a far more ancient animal brain."*

-- David Krakauer, President and William H. Miller Professor of Complex Systems, Santa Fe Institute (1)

*"The neocortex stores sequences of patterns."*

-- Jeff Hawkins -- *On Intelligence* (2)

*"Sad songs say so much."*

-- Elton John (3)

In 2017, Cormac McCarthy wrote his famous essay on the subconscious mind in the online magazine Nautilus called "The Kekulé Problem: Where did language come from?" In the story, a chemist cannot figure out the shape or structure of the benzene molecule and only in a dream while sleeping was the shape of a ring revealed to him and, thus, did the chemist discover the structure of the benzene molecule. Formally, the French chemist Friedrich August Kekulé said that he had discovered the ring shape of the benzene molecule after a dream of a snake seizing its own tail (akin to the ancient symbol known as the ouroboros) (4).

We must note the significance of this event. The event implies that our subconscious is aware of the conscious mind's problems and likely even able to understand language. The question that Cormac McCarthy considered was: why is the reply from the subconscious thus in the form of images or symbols and not spoken language? Cormac McCarthy's claim was that the subconscious mind does not respond to the awake mind with spoken language as it prefers not to: "why is the unconscious so loathe to speak to us? Why the images, metaphors, pictures? Why the dreams... The unconscious is just not used to giving verbal instructions and is not happy doing so. Habits of two million years duration are hard to break (pg. 4)."

In his essay, Cormac McCarthy (1) describes in length his theories of the subconscious including its capabilities and its ability to communicate:

The unconscious is a biological system before it is anything else. To put it as pithily as possibly - and as accurately - the unconscious is a machine for operating an animal. ... But the duties of the unconscious are beyond counting. Everything from scratching an itch to solving math problems. ... Did language meet some need? No. The other five thousand plus mammals among us do fine without it (pg. 1).

How the unconscious goes about its work is not so much poorly understood as not understood at all (pg. 2).

It's hard to escape the conclusion that the unconscious is laboring under a moral compulsion to educate us.... But the fact that the unconscious prefers avoiding verbal instructions pretty much altogether - even where they would appear to be quite useful - suggests rather strongly that it doesn't

much like language and even that it doesn't trust it. And why is that? How about for the good and sufficient reason that it has been getting along quite well without it for a couple of million years? (pg. 3).

The unconscious is concerned with rules but these rules will require your cooperation. The unconscious wants to give guidance to your life in general but it doesn't care what toothpaste you use. And while the path which it suggests for you may be broad it doesn't include going over a cliff. We can see this in dreams. Those disturbing dreams which wake us from sleep are purely graphic. No one speaks (pg. 4).

In a different research path related to understanding the human mind, Jeff Hawkins and his team of computational neuroscientists at Numenta Corporation believe that the mind stores entries as sequences. In his book *On Intelligence*, Jeff Hawkins (2) states:

The brain treats abstract and concrete objects in the same way. They are both just sequences of patterns that occur together over time in a predictable fashion. The fact that certain input patterns repeat time and again is what lets a cortical region know that those experiences are caused by a real object in the world (pg. 128).

An auto associate memory can be designed to store sequences of patterns or temporal patterns. This feature is accomplished by adding a time delay to the feedback. With this delay you can present an auto associative memory with a sequence of patterns, similar to a melody, and it can remember the sequence. I might feed in the first few notes of "twinkle twinkle little star" and the memory returns the whole song. When presented with part of the sequence, the memory can recall the rest. As we will see later, this is how people learn practically everything, as a sequence of patterns (pg. 30).

We can think of these inputs to layer 1 as the name of a song (input from above) and where we are in a song (delayed activity from active columns in the same region) (pg. 146).

If we consider both theories in tandem, we can then theorize that our subconscious mind, while it may not be able to send images to the awake conscious mind as it does in dreams to the sleeping mind, might be able to send themes or even short bits of language to the awake mind via the lyrics of songs. Those random times an old song "pops in your head" (not triggered by a radio tune or TV commercial reminder) may not be random at all but, rather, a message of encouragement or a description of state or even a warning from our primordial subconscious mind. In essence, music may be the "language" our subconscious uses to "speak back" to our conscious self and, thus, we have a cause for our human love of music.

Our subconscious mind cannot speak to us (or reply to us) in language directly, at least outside of a dream state. Our subconscious thus communicates via entities stored in the brain i.e., images and perhaps sequences including music. Since music is also stored as a sequence, as previously noted by the research of Jeff Hawkins and team, our subconscious can send a reply to the awake mind via the sequence of an entire musical song. But our subconscious mind is doing so to drive awareness to specific lyrics as a reply or update message from one's subconscious. Thus, only via replies using sequences of music can our subconscious message back to the awake mind. Specific songs can become "stuck" in an individual's mind with lyrics representing a recommendation or confirmation of the current behavioral or emotional state of a person. Note the human affinity to music during times like emotional crisis or heartbreak.

Some example scenarios of possible emotional states with associated lyrics from famous songs as replies from a subconscious mind include:

An individual that is socially isolated: *"You can check-out any time you like, but you can never leave!"*<sup>(5)</sup>

An individual that is depressed: *"Turn 'em on, turn 'em on, Turn on those sad songs, When all hope is gone, Why don't you tune in and turn them on?"* [3]

An individual that is exhausted or over-worked: *"What I wouldn't give for only one night, A little relief in sight, Or someday when times weren't so tight."* <sup>[6]</sup> or *"I'm empty and aching and I don't know why."* <sup>[7]</sup>

An individual who has come to the end of a long project or is at an end of an era: *"And the three men I admire most, The Father, Son and the Holy Ghost, They caught the last train for the coast, The day the music died."* <sup>[8]</sup>

An individual who has completed a long project or can return to social activity: *"finished my dinner, now I can go outside."* <sup>[9]</sup>

An individual that is hyperactive or planning a night out: *"The atmosphere on the streets tonight, Is the driving beat of the world, So take your share of the gifts that are there, They all belong to you, And come what may at the break of each day, We all begin anew once more, we all begin anew, Baby, baby, baby, let's investigate, The other side of life tonight, The lovers and the fighters and the risks they take, Are on the other side of life tonight, Let's lose our way, go completely astray."* <sup>[10]</sup>

An individual in a state of difficulty or crisis: *"Nothing gonna stop me now... Nothing gonna stop me now."* <sup>[11]</sup>

In summary, there is the possibility of the subconscious human mind, especially in intervals of extreme emotion, communicating in replies to the awake mind via song lyrics - that had been stored as full songs as sequences in the brain. This behavior may be the cause of human affinity to music.

Note that there may be an additional reason for human's love of music. Let's consider the question of why so many top musicians have issues with addiction. It is not so easy to write this association off as caused by the "rockstar culture," lifestyle, image, or community.

Over time, as aggregate human intelligence increased, we see a correlation with intelligence and empathy. Qingke Guo et al. found in their 2019 research that "highly intelligent people are more likely to behave in ways that contribute to the welfare of others due to higher levels of empathy and developed moral identity."<sup>[12]</sup> Dr. Heidi Moawad notes in her 2017 paper how "researchers from Boston University School of Medicine used cross sectional data obtained from 590 medical students" and using "the Jefferson (JSPE) scale of physician empathy and the results of objective structured clinical examination (OSCE) scores, researchers found a positive correlation between the students' JSPE scores and their OSCE scores."<sup>[13]</sup>

But there is also a correlation with empathy, or higher empathy, and addiction. As Brittany Oliver noted in her 2019 post:

Because empathaths absorb the energy of those around them, they can be predisposed to higher rates of stress and become easily overwhelmed, exhausted, and overstimulated. The stress and anxiety they absorb from others can leave them predisposed to developing depression, anxiety, emotional burnout, and an increased risk for developing an addiction (pg. 1).<sup>[14]</sup>

High empathy comes with the side effects of emotional extremes from devastating life events. We can imagine the human gene pool needing a mechanism to prevent minds with higher empathy from being damaged or helpless. At the risk of excess anthropomorphizing of nature, we still must acknowledge that nature is an expert at copying, stealing, and utilizing whatever tools it can find. Thus, we can further imagine the gene pool needing to ensure critical even lifesaving lessons or information - especially regarding the present state of an environment - is communicated to these high empathy minds, or all minds in a given family, tribe, or population. Epigenetic messaging in DNA is much too slow in this situation. Thus, if sequences are the grammar of our subconscious, we can imagine the evolutionary fitness or survival benefit of our minds using music for this purpose. In essence, music becomes a fundamental meme.

For example, to avoid heartbreak related devastation like suicide, that a person with excess empathy will endure, the communication of the gene pool's historical knowledge (that "life will get better," that life moves on, and that others have shared and survived the same painful emotional experience) must be rapidly sent or distributed and also easily available and recallable. As noted in 2020 on ScienceDirect.com, "distinct empathic profiles are associated with suicidal behavior, and some suggest that people who attempt suicide

may have higher levels of empathy.”<sup>(15)</sup> Thus, we see the secondary use of music: subconscious minds using music to communicate to other subconscious minds now and even into the near and far future; music stored as a sequence, the fundamental grammar of our subconscious. Huang in 2020 describes how music reinforces empathy, “empathy is built through processes like those involved in music playing, including sharing feelings, imitation, and collaborating.”<sup>(16)</sup> Thus, we realize a plausible explanation for addictive minds being drawn to music or, equivalently, many musicians fighting issues with addiction.

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