



Mendel Kaelen

Experience as Medicine: Insights from Studying Psychedelics and Music

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“MANY PEOPLE SIMPLY CANNOT BE CHANGED,” one university professor told me.

This was 2011. I was a neuroscience student at the University of Groningen in the Netherlands, and was writing an essay about therapy-resistant depression. “But,” he continued in a fatherly, slightly patronizing tone, “you’re still young, so please dream on.” His thick eyebrows slowly moved upwards again and then the professor (who was also a psychiatrist) initiated an enthusiastic discourse, trying to persuade me to shift the focus of my essay to the genetic determinants of social anxiety in mice.

When I handed in my essay, unfortunately the psychiatrist’s eyebrows did not move upwards again. I had followed his suggestion to dream on, and argued that the assumption that many people cannot be changed is false. In my argument, I referred to recent research with psychedelics and MDMA, a field of research that is becoming particularly fruitful. These compounds can facilitate immediate changes in mood, behaviour, and personality which can be long-lasting, even with just a single dose. This is unheard-of in psychiatry, and suggests not only a more effective type of medication but, more importantly, a different paradigm of therapy: a different view on what therapeutic change means, and how this change can be brought about.

Typically, during psychedelic therapy sessions, individuals are encouraged to focus their attention inwards while listening to music. The period of peak drug effects is often characterised by minimal verbal interactions, waves of intense emotionality, and eruptions of therapeutic insights. Although it is no overstatement to describe psychedelic therapy as a highly non-directive and client-centred approach, it does beg the question of whether the music itself may provide some form of direction. If so, understanding how music does this—and how it can best be used—is important, particularly when the therapy is being implemented on an increasingly large scale.

For my Ph.D., I have combined neuroscience and qualitative research to better understand the functions of music in psychedelic therapy. In our first studies, we demonstrated that

under the influence of the classic psychedelic LSD, people feel stronger emotions in response to music. This effect was associated with increased activation of a brain network specialised in attributing meaning and emotion to “sequences of sound”—including a region usually associated with language, known as Broca’s area.

Importantly, these changes happened mostly in response to music’s timbre (also known as tone color). To understand what timbre refers to, imagine one person playing the cello and another person playing the flute. When both produce exactly the same note and volume, then the sound quality you use to differentiate the instruments is what we call timbre. In our lives, we constantly use this acoustic property to give meaning not only to instruments, but to all objects and human voices we hear. Already, prior to birth, we are equipped with an outstanding capacity to pick up subtle details in timbre—a skill used to recognize and emotionally bond with our mother’s voice. Timbre has been called “the interface of sound and emotion” and the increased responsivity of the brain to timbre under a psychedelic may underlie the enhanced emotionality in response to music.

We also found that the combination of LSD and music targets a brain circuit associated with the construction of personal memories. The more information that flowed from a region called the parahippocampus to the visual cortex, the more vivid and autobiographical the mental imagery became. Interviews we conducted with individuals undergoing psychedelic therapy about their experience of the music are much in line with this. Participants frequently described the music as providing a sense of personal care and reassurance, and as if it guided them on a “journey.” “Every new song would bring a different image,” one participant said. “The music was the vehicle that transported me from one place to the other,” another explained. One described the music as “very sad and very beautiful,” and that within her flooding of tears, she found her self-blame to be replaced by self-compassion.

While it is satisfying to know that the music selection

worked well for the majority of participants in this study, we also learned from closely listening to those for whom the music did not work well. From this, we identified three ingredients in the music-experience that predict therapeutic changes: 1) Liking, referring to appreciation of the music's style and quality, 2) Resonance, referring to the degree of harmony between the music and the state of the listener, and 3) Openness, referring to the degree to which the listener was accepting the influences of the music, rather than wanting the experience to be different. The higher individuals scored on each of these, the stronger was their therapeutic response. This knowledge may help treatment providers improve their use of music to support the therapeutic process, which is highly dynamic and unique for each individual.

Throughout our life, we continuously acquire new experiences, and our brains remember those that are important to us. This produces something that we could call an "inner roadmap," that helps us give meaning to, and thrive in, a complex world. Some experiences, however, give birth to a roadmap that does not serve this goal. Emotional pains of all sorts can result in beliefs about ourselves and our world which are destructive—in particular, when they resist change. It is this inner roadmap, again unique for each individual, that people seek to change when entering psychotherapy.

Psychedelics may work in therapy by temporarily dissolving this inner roadmap, making any stimulus inhabit a whole new world of meanings. The environment in which these experiences take place do therefore need to be chosen carefully. Importantly, the environment can be designed strategically, such that it becomes an active element of the therapeutic procedure. I believe this is what is being done with music: In the absence of the usual roadmap, music functions like a navigator that suggests new routes to follow without using words. Instead, music bypasses the intellect to shift the person's awareness directly to those most intimate parts of their being. Subsequently, when the listener is open to the music's suggestion to be "carried away" in

this direction, the listener can become an explorer—one who travels through deep inner territories to discover or rediscover new aspects of oneself, and to experience those aspects in fuller emotional depth.

"This music drove the most beautiful experience of my life," one participant from our study stated. Experiences are the source of learning, and learning is the foundation for change—in particular when experiences are strong and personally meaningful. Utilizing experiences may therefore be the most effective way, and maybe even the only way, to update the inner roadmaps we use.

Psychedelics and music seem particularly effective in providing such experiences. Yet, there is much left to learn, and many opportunities open to explore. Further development of this paradigm of therapy, where experience is the basis for change, is therefore an invitation to those who are masters of experience—not only the psychotherapists, but also the musicians, the light-artists, the installation-artists, the design-artists, the architects, and so on.

All expertise in psychotherapy, art, science, and technology can be united into a framework that offers true life-changing experiences. 🌀

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