Music and the brain – a Q&A with Molly Gebrian

University Communications
September 2022

Neuroscience and music are not typically mentioned in the same sentence, but for Molly Gebrian [1], assistant professor at the Fred Fox School of Music [2], the two seemingly separate disciplines are inseparable.

Gebrian's instrument of choice is the viola, the slightly larger sister of the violin. One of her biggest passions is understanding how people learn and experience music, which has led her to collaborate on neuroscience research with leading scientists on music and the brain.

Gebrian draws on her background in neuroscience to gain insight into how the brain learns, and how musicians can use this information to their advantage in the practice room. Gebrian is a frequent presenter on topics having to do with music and neuroscience at conferences and universities in the U.S. and abroad. She has recently been featured on Arizona Illustrated [3].

In early 2020, the pandemic forced many into social distancing and isolation. Being cooped up at home for prolonged amounts of time encouraged many to pick up a musical instrument and spend time they didn't have before trying to get better at it and experiencing the joy of making music themselves. That's when Gebrian decided to share her insights with a wider audience through her YouTube channel [4].

Lo Que Pasa asked Gebrian for her thoughts on learning a musical instrument later in life, how to best use limited time to get better, and how recent advances in neuroscience can help amateurs and professionals become more well-rounded musicians.

What sparked your interest in the interconnections of neuroscience and music?

In my first year at Oberlin College, I took a seminar on neuroscience because it looked interesting, and it was hands-down the most fascinating thing I had ever learned about. So, I double-majored in viola performance and neuroscience. In grad school at New England Conservatory, my roommate participated in a study at Harvard that was looking at musicians’ versus non-musicians' brains. When she came home and told me about it, I realized I really missed neuroscience. I was fortunate that NEC allowed me to continue that interest through independent studies. My first independent study was looking into the research literature on learning and thinking how to apply it to music and practicing. I started seeing, “Oh, wait! There's a way to combine these interests.”

What is your take on talent versus practice?

I have been on a mission my whole life to get rid of the word "talent" because the research is unequivocal: Talent does not matter. What matters is work ethic and practicing. The research is clear that calling somebody talented or not talented can even be damaging, and here is why: If you're labeled as not talented, then you feel like “well, I shouldn't even bother trying.”

I think when people say "talent,” what they really mean is that this person picks up quickly on the initial stages of learning something. Everybody has things that come more easily to them than other things. But just because you can do something easily does not mean you will necessarily go further than somebody else. It's all about the work you put in, because if somebody who has talent doesn't put in the work, they're not going anywhere. And actually, the students who struggle the most in music school are the students who have been labeled "talented." The kids who've had to work at it from the beginning have developed the skills needed to work through a problem. Whereas the so-called "talented kids" never developed that toolbox. They think that working hard is saying something negative about them as a person, and they really, really struggle.

How do we learn playing instruments differently as children versus adults?

One of the biggest differences between children and adults is that kids kind of learn things by osmosis – they just absorb things. As adults, it's different, and it requires focus and intention to learn something. You're not going to just absorb the material. When we’re trying to learn something, we have to make sure we're not distracted. We have to make sure we have a specific intention to learn this thing or improve at this thing. And we have to be much more mindful about what we're doing than kids who can just, you know, kind of pick it up as they go.

What are your thoughts on deliberate versus distracted practice?

Distracted practice is not practice. It's wasted time. If you do something over and over mindlessly, you're not going to get better at it, and there's going to be sloppiness. You do need to do a certain number of correct repetitions to solidify the correct way to do something. But if those repetitions are not intentional and mindful, and you're not counting them, you're not going to solidify anything because you need to do things more times correctly than incorrectly. The research on over-
learning says that however many times you did it wrong before you got it right is how many times you have to do it correctly. So, if you got it wrong 10 times, you've got to do it 10 times correctly.

**Can you share some practice tips?**

What I recommend to my students is that for all the music they're working on, they divide the music into red, yellow and green sections. Red sections are the emergencies, like "this is a disaster – I can't play this at all." Yellow sections don't sound good yet, but they're not like emergencies, and green sections either sound great or are basically fine. Then start with your red sections. That's sort of a big picture mapping out what to do in a given day. At the end of my practice sessions, when it's fresh in my mind what the issues were, I write down some quick notes so that I know where to start the next time. I don't plan my practicing in terms of specifically what I'm going to do more than a day in advance, because I don't know what I need to do tomorrow until I see what I've done today.

**In your most recent [video](https://www.youtube.com/watch?v=W61WOvUQLng), you talk about micro-breaks. What's that about?**

We think that you have to sit down and study for a long period of time, or you have to sit down and practice for a long period of time because it's when you're sitting and practicing that the learning is taking place. But actually, the learning is taking place during the breaks. In the time when you are taking a break, your brain is doing necessary reconstruction to make the skill you were working on feel easier. When you come back to it, your brain is at a better place for you to be able to play it or find further improvement. So, it's about understanding that breaks are necessary for learning and can really help speed up and solidify learning.

**Many hobby musicians are juggling a day job and family obligations. How can they get the most out of a 20-minute practice session?**

It's not just amateurs. All musicians I know, myself included, have way less time to practice than they'd like. I think the most important thing when you sit down to practice is that it doesn't matter how much or how little time you have. You can get stuff done in five minutes. But you have to have a very clear goal for your practice session, and you have to go into it with ideas about problem-solving on that specific goal. Unless the music you are working on is brand new, you should have a sense of where your hard spots are that trip you up. You need to start right at those spots, and you need to figure out "why do I get messed up here?" and "what are some ways that I could break this problem down into smaller problems that I can solve?" To balance learning skills and learning music, set a timer, maybe five minutes on one thing, 10 minutes on another. When the timer goes off, you're done with your work on that for that day. It's a lifetime of work, and so you just do a little bit each day.

**What advice do you have for someone thinking about picking up a musical instrument later in life?**

If there's an instrument that you've always wanted to play, who cares what other people think about it? Go get one if you want to play it, and it doesn't matter how old you are, it doesn't matter if you're 95 years old, go get one and start playing.

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