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Can we change our brains for good? | Nii Addy

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The Veritas Forum

PART OF A SPECIAL 6-WEEK SERIES | The pandemic upended all of our lives. As a response, we started different habits — and perhaps even formed addictions — that helped us to cope. But, after two years of pandemic living, is it possible to change? In this episode, we talk with Dr. Nii Addy, a researcher at Yale specializing in addiction, depression, and anxiety. And he says we can have hope — according to his research, it is possible to rewire our brains for greater mental health. If you're curious to hear more from Nii, check out his podcast, Addy Hour, wherever you listen to podcasts! Like what you heard? Rate and review Beyond the Forum on Apple Podcasts to help more people discover our episodes. And, get updates on more ideas that shape our lives by signing up for our email newsletter here: https://mailchi.mp/veritas/newslettersubscribe_pd. Thanks for listening!

Transcript

The pandemic upended all of our lives. Weddings were cancelled, loved ones passed away, people lost their jobs, and students adjusted to online classes. The unknowns increased anxiety.

The isolation and confinement caused depression to skyrocket. People didn't get just one new stressor during the pandemic — they got a lot — all at the same time. And one way we dealt with these new stressors was through drugs and alcohol.

The New York Times report was a new study that was made possible by the University of New York. The New York Times reported that between April 2020 and April 2021, more than 100,000 Americans died of overdoses, mainly from synthetic opioids like fentanyl. That's a 30 percent increase from the year before, and it's more than the toll of car crashes and gun fatalities during the same period combined.

And most of the people who died of overdoses were between the ages of 25 and 55 in the prime of life. Alcohol consumption increased, too. Alcohol sales in 2020 were at their highest in 18 years.

Quote, "Excessive drinking," which the CDC says is four or more drinks for women and five or more drinks for men in one sitting, increased by 21 percent. Some scientists estimate that this one year increase in alcohol consumption will result in 8,000 additional deaths from alcohol-related liver disease by 2040. People were talking about the mental health crisis before the pandemic, but the pandemic exposed just how dire it was and how quickly we needed to address it.

And today's guest, me, Addie, is at the forefront of mental health research. I'm me, Addie. I'm a neuroscientist, which means I'm someone who studies brain biology.

I'm a professor at the Yale School of Medicine, also a mental health advocate. Knee works in a research lab. He and his team try to understand what's happening in our brains when we do things and why we do them.

In this episode, we talk about anxiety, depression, and mostly addiction, about how trauma, like a pandemic, changes our brains and about how we can take an active role in rewiring our brains for greater mental health. This is Beyond the Forum, a podcast from the Veritas Forum in PRX that explores the ideas that shape our lives. This season, we're talking about character and virtue.

I'm your host, Bethany Jenkins, and I run the media and content work at the Veritas Forum, a Christian nonprofit that hosts conversations that matter across different worldviews. Knee tells me that anxiety, depression, and addiction are so closely related that it's often hard to parse out their independent definitions and symptoms. For example, some symptoms of addiction might indicate anxiety or depression.

I can't give you the gold standard definition of addiction because technically there are 11 different symptoms. If you have three of those, or less it's mild, four to five is moderate, six or more severe. A lot of those symptoms also overlap with things that might happen if someone is navigating depression or dealing with anxiety.

And then even within that, there's lots of different ways and symptoms they might have that would categorize them for being clinically depressed. So I would say for us, it's a challenge. In addition, symptoms often vary person to person.

Some people sleep more, some people sleep less, some people eat more, some people eat less. But Knee says there's one universal symptom. Common between all three is when those things, whether it's using a substance or dealing with anxiety or not feeling like your full self becomes disruptive to kind of your normal day to day activities and whether it impairs your day to day living in a sense.

So the question is not whether your behavior mimics the behavior of your most upbeat friend, but whether you're engaging in your usual activities. And when it comes to addiction and its disruptive effects, me says that you can be addicted to a variety of

things from substances to behaviors. We focused on substance like nicotine, cocaine and phetamine, heroin, opioids, things like that, alcohol.

So, and nicotine actually being one of the most addictive substances, maybe not necessarily the most. It doesn't give the greatest high or the biggest high, but it's very difficult for people to quit. But addiction isn't limited to substances alone.

You can definitely see some of those same symptoms that are associated with substances and the diagnostic and statistical manual that you can also apply to other areas as well. One cause of anxiety, depression and addiction, Knee says, is trauma. It can be physical, race-based, generational, psychological, or any kind of trauma.

If something traumatic happens to you, the neural pathways in your brain can change. Neuroscientists often refer to the brain's ability to change as "neuroplasticity". Knee spoke about this concept when we interviewed him a couple years ago.

The general principle that's really good to take into account is that changes in the brain influence our behavior in a lot of different ways. And that can be for good or for bad. When we learn something, there's a change in the brain that occurs that allows us to remember that.

But that can also happen in negative ways. So if someone undergoes a traumatic experience, that can also cause changes in the brain, that can cause a plasticity, where recalling those traumatic experiences can actually cause them to go into a tailspin or have periods of anxiety. An extreme case of that would be pro-traumatic stress disorder.

But the key piece to remember is that all of us are undergoing changes in our brain when we learn or experience different things. And so it's a little bit of a continuum. Those changes are naturally occurring in all of us, but sometimes those changes can go to an extent that leads us to an area that would be maladaptive, or harmful, or what we might consider to be a pathology.

For some, the trauma of the pandemic may have changed the wiring of their brains. It certainly exacerbated substance abuse and other mental health issues. Knee says that anxiety, for example, was a natural response to the pandemic for so many of us because we couldn't predict the future.

By definition, that's often where anxiety comes from. I don't know what's happening next. I can't control it.

I feel uncomfortable. I feel anxious. I don't know where that can go out.

I don't know when this is going to end. One positive effect of the pandemic is that it has lowered guilt and shame around mental health issues like anxiety. Guilt is the feeling that you have done something wrong.

Shame is the feeling that you are unworthy. We're not going to shame people for being anxious in what is a very anxiety-producing, worldwide pandemic. With less guilt and shame, it's easier to overcome mental health challenges because an important step in overcoming shame and getting help is telling someone you have a problem.

The first part is probably the most challenging. That's really seeking out people who are going to be in your zone and in your lane supporting you without judgment, which is hard. I realize even as I'm saying that, some people might be bristling hearing that.

Knee says that as hard as it is, finding community, even if it's just one or two people, is vital. In our conversation, we focused mainly on addiction. And Knee says his research shows that community can help us in our fight against it.

When we're doing the research in the lab, the rats and the mice, they'll use substances that people use as well, but they're much more likely to use them if they're in isolation. So if you put them in community and let them play together, they're not as likely to actually use a substance. And there is biology that backs that up as well.

So people will talk about oxytocin, which is a specific peptide or chemical in our brain that actually gets released when we're in community with other people. Of course, community cuts both ways. One reason why rehab programs work, for example, is that you're in community with other people who are working on their addictions together.

But one reason people relapse after they leave rehab programs is because they go back to their old communities. Well, I left town for a few months. I went to a different place.

I got treatment there. I was successful. I came back to my old environment.

Even if people aren't saying, "Oh, come on, you should join us." Just being there and being that same environment is going to make it that much more difficult. Not to say that it can't be done, but it has to be strategic and intentional. Hi, all.

This is Carly Regal, the assistant producer of Beyond the Forum. If you're loving the podcast so far, we want to invite you to continue engaging in these important conversations by signing up for our newsletter. Each month, you'll receive thoughtful content about the ideas that shape our lives, updates from our student and faculty partners, and other Veritas news and events.

You can sign up today by visiting [veritas.org](https://www.veritas.org). Thanks for tuning in and enjoy the rest of the show. Five months ago, I went completely alcohol-free after reading a book called *This Naked Mind*, which is about alcohol and how it affects the brain. In the first month of quitting, I still hung around friends who were drinking, but I made sure to do two things.

First, I always had a mocktail in my hand, even if it was just a tonic in line. And second, I paid attention to how it felt to say no, especially over time. The more I said no, the easier

it got.

It was like working out a muscle. At first, it was painful, but I increasingly felt stronger and stronger. I even felt free because I realized that I could be in social situations and not drink.

I wasn't bound by my situation. If you keep going to that environment and you don't drink, that relationship is going to be disentangled in a sense. And that's basically what people do when they do exposure therapy.

So you can do that for substances. You can also do it for phobias, to someone who may be afraid of spiders, for instance. They get exposed to spiders a little bit of time here and there so that their brains don't react as much to that.

So it's that same concept of exposure therapy. Knee says that when I said no, I was strengthening my prefrontal cortex, which is the part of the brain that makes decisions and has the ability to differentiate between conflicting thoughts, like a good impulse or a bad one. So basically that part of our brain is talking to the emotional part saying, "Okay, well, this is a situation I'm familiar with.

There's no reason to overreact in a sense not to say that emotions are overreactions, but they could be in specific instances." But that same type of thing, so that's important for our emotional regulation, that can also happen when we're thinking about substance use as well. So that part, the prefrontal cortex, that rational emotional control, executive function piece, the more we can quote unquote, bring that online. That can help us kind of decrease sometimes our responses to those things.

So if you're continuing to do that, you're basically building your prefrontal cortex muscle to become stronger to kind of dampen some of the other things. Even though you're growing stronger and stronger, that doesn't mean you'll never relapse. In fact, Knee says that relapse is common and even a part of the journey.

The big question is what to do after you relapse? It doesn't negate the progress that people have made. So yes, I mean, there are a lot of times when people will celebrate being sober for certain peers at times, you know, see that on Twitter and things like that. And that's great.

I definitely am a proponent of that as well. But I am also a proponent of starting over. So going back again to smoking nicotine being one of the hardest things for people to quit.

The success rates with most things on the market in terms of nicotine replacement therapy or shanticks and things like that, it's pretty poor. And that teens to 20%. The biggest success or the biggest factor for quitting smoking is trying multiple times.

So five, six, seven, eight, nine, ten quit attempts before oftentimes before people

actually become quote unquote successful on that. So if we were only focused on, did it work the first time? None of this would move forward. Even people who have quote unquote successfully quit and had a really stressful situation has happened and had a relapse, but then start again.

I'm not going to be one to negate that and put that in that shame category and say, Oh, look what you just undid with all the things that we've been trying to help you with for years. Part of the reason that relapsing is so common is because substance abuse changes the wiring of the brain. And when you're trying to quit, you're trying to rewire it again.

This is no small task. The fact that people have used substances for a long time has led to changes in the brain plasticity that we talked about. So that's good to acknowledge and to understand and to know that that's why the craving happens because the drugs actually lead to plasticity in the brain.

They lead to heightened responses to certain environments, making it that much more difficult to quit. That's not to say that we can't do things to intervene there, but we should at least acknowledge that. And also acknowledge that that's going to make it difficult.

So when you have the successes celebrate that, if you have a moment where you don't have a success, start again and continue to celebrate that. One reason he says he can have so much hope in his work is because he sees neuroscience as one expression of the study of God's creation. He sees no conflict between his rigorous scientific thinking and his faith in God.

In fact, it's quite the opposite. God has given us tools to be able to understand what's happening in our own brains. And that's a gift in a sense.

So a lot of times we'll talk about that by the cognition. So if we have this tool to be able to understand it, this God-given tool, we should take full advantage of it. That's a way that God has allowed us to bring healing.

So while you might pray over something, we shouldn't ignore those other components as well. A humorous example I often give is if someone breaks their arm, very rarely will you hear someone say, "I'm just going to pray over it and I'm not going to go to the hospital." Well, the same thing when we talk about the brain and mental health. We have tools to pray over it and also to address these things from many different angles.

So we should take advantage of the full array of gifts and tools and knowledge that God has given us. Knee's faith also gives him a vision of mental health that allows him to live in a real-life tension. He's hopeful that anyone can embrace mental wellness, but he's humble enough to admit that full healing may not be possible.

Wellness, like illness, often looks different for different people. You can live with a mental illness and still have wellness. Wellness doesn't mean the omission or removal of mental illness.

People can learn how to navigate that. So someone, for instance, is diagnosed with bipolar. That's not to say that that's the end of the line and that's the end of life as they know it.

In some ways, it's a shift, but there are ways that people can navigate that and live in a place of wellness where they have good mental health practices and then day to day they are living a whole life. There will be challenges that come up along the way, but that's not to say that they can't live in a place of wellness. At the same time, you could have someone who doesn't have a mental illness who is not living in a place of wellness.

Knee says the way neuroscience has traditionally approached mental health has often been inadequate, in part because research is so siloed. When people go to graduate school to study neuroscience, they may be in different types of labs. They might be in a lab that uses things like pharmacology.

They might be in a lab that focuses on psychology. They might be in a lab that focuses on physiology, so how things actually work in the body. They might be in a lab that focuses on genetics.

He says that there's an advantage to looking at each of these sub-fields individually, but we must not forget to treat the whole person. When we don't take into account everything that's happened to a person, it's a disservice. We have to think about the whole person because we're not just trying to improve in one specific area, because it has impacts on our entire lives.

Our biology is like that as well. If we think about the importance of the brain, a lot of things that we do to our eyes are also going to influence our brain, so we can't isolate different parts of it. But in ways that the field in the past, people have said, "Okay, let's leave religion to the side." As if that wasn't a part of who we were as whole beings.

So I think people have moved forward and appropriately said, "Well, if this is something that is central to someone's life, we need to take that into account as well." The pandemic didn't just make us more aware of our mental health crisis. It also made us more aware of how holistic our lives are. Working from home or navigating our kids online schooling blurred the so-called clean lines between work and home.

And getting so many stressors at the same time impacted every aspect of our lives. We are whole people, emotionally, physically, and spiritually. And knee is insightful when he says we need to be treated that way.

But perhaps the biggest takeaway from our conversation is that we can take an active

role in changing our brains wiring. Knee spoke about neuroplasticity in the sense of trauma or addiction changing our brains' chemistry negatively. That's an important point because it acknowledges that healing is an uphill battle.

But neuroplasticity can offer us hope and treatment as well. We can rewire our brains to have different responses. Whatever mental health challenges we may face, we can change and grow.

Next week is our last episode of the season, and it's about how we move forward in the new normal of our lives. We talk with artist and author Mako Fujimura about Kinsugi, which is an art form that takes broken pottery and renews it. And the imagery is profound.

You don't want to miss it. Hi again, this is assistant producer Carly Riegel. To end our episode, we at Beyond the Forum want to take time to say thanks to all the folks who helped us get this show together.

Our first thanks goes to our guest, Niaity. Thank you for joining us and for sharing more about your amazing research. Nia has his own podcast.

It's called Addy Hour, and you can listen to it wherever you get your podcasts. We also want to thank our production team at PRX. Galen Beebe gave us fantastic edits on our narration, and Jocelyn Gonzalez and Morgan Flannery made everything sound good, which is not an easy task.

And of course, we want to thank the students who host and plan these forum conversations, as well as the John Templeton Foundation and all of our donors for their generous support of our conversations. Alright, that's all for this episode. Thanks for listening to Beyond the Forum.

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