

WEBVTT

NOTE duration: "00:56:43.560"

NOTE Confidence: 0.9051839

00:00:00.160 --> 00:00:01.139 Dispense with the preliminaries.

NOTE Confidence: 0.99754757

00:00:01.760 --> 00:00:02.259 So

NOTE Confidence: 0.69876343

00:00:03.679 --> 00:00:04.500 it's this.

NOTE Confidence: 0.8235667

00:00:09.200 --> 00:00:10.480 And then this will work.

NOTE Confidence: 0.8235667

00:00:10.480 --> 00:00:12.880 Yeah? Alright. So as doctor

NOTE Confidence: 0.8235667

00:00:12.880 --> 00:00:13.700 Moli mentioned,

NOTE Confidence: 0.8950025

00:00:14.240 --> 00:00:15.775 I'm I've got my labs

NOTE Confidence: 0.8950025

00:00:15.775 --> 00:00:17.555 have the pleasure of developing

NOTE Confidence: 0.95509464

00:00:18.415 --> 00:00:20.175 some new digital therapies. Actually,

NOTE Confidence: 0.95509464

00:00:20.175 --> 00:00:21.375 we started it as a

NOTE Confidence: 0.95509464

00:00:21.375 --> 00:00:22.275 Yale incubator,

NOTE Confidence: 0.9593352

00:00:22.735 --> 00:00:23.635 back in the day,

NOTE Confidence: 0.96133846

00:00:24.255 --> 00:00:25.695 that's now merged with a

NOTE Confidence: 0.96133846

00:00:25.695 --> 00:00:27.215 company called Sharecare. So I'm

NOTE Confidence: 0.96133846

00:00:27.215 --> 00:00:28.750 a consultant for them, as  
NOTE Confidence: 0.96133846

00:00:28.750 --> 00:00:29.630 part of the disclosure. All  
NOTE Confidence: 0.96133846

00:00:29.630 --> 00:00:31.310 these disclosures are managed by  
NOTE Confidence: 0.96133846

00:00:31.310 --> 00:00:32.050 Brown University's,  
NOTE Confidence: 0.9745759

00:00:32.990 --> 00:00:34.510 conflict of interest policy. I've  
NOTE Confidence: 0.9745759

00:00:34.510 --> 00:00:36.050 got this as well.  
NOTE Confidence: 0.877868

00:00:36.989 --> 00:00:38.850 I I wanna start by,  
NOTE Confidence: 0.9983592

00:00:39.630 --> 00:00:40.530 just acknowledging  
NOTE Confidence: 0.98059946

00:00:43.175 --> 00:00:44.695 acknowledging that and, you know,  
NOTE Confidence: 0.98059946

00:00:44.695 --> 00:00:46.155 I just realized this morning  
NOTE Confidence: 0.98059946

00:00:46.215 --> 00:00:48.215 that I started residency here  
NOTE Confidence: 0.98059946

00:00:48.215 --> 00:00:49.335 twenty years ago, so back  
NOTE Confidence: 0.98059946

00:00:49.335 --> 00:00:50.395 in two thousand four.  
NOTE Confidence: 0.8990073

00:00:50.775 --> 00:00:51.275 And,  
NOTE Confidence: 0.95715344

00:00:52.935 --> 00:00:53.975 ten years ago, I left  
NOTE Confidence: 0.95715344

00:00:53.975 --> 00:00:55.260 Yale ten years ago. Ago.

NOTE Confidence: 0.95715344

00:00:55.260 --> 00:00:57.100 Often, there's if you haven't

NOTE Confidence: 0.95715344

00:00:57.100 --> 00:00:58.140 heard the joke, I will

NOTE Confidence: 0.95715344

00:00:58.140 --> 00:00:59.820 say it officially. You know,

NOTE Confidence: 0.95715344

00:00:59.820 --> 00:01:00.780 I've I've heard from people

NOTE Confidence: 0.95715344

00:01:00.780 --> 00:01:01.500 say, oh, it's better to

NOTE Confidence: 0.95715344

00:01:01.500 --> 00:01:02.380 be from Yale than at

NOTE Confidence: 0.95715344

00:01:02.380 --> 00:01:02.880 Yale.

NOTE Confidence: 0.968199

00:01:03.580 --> 00:01:04.540 And I will say, I'm

NOTE Confidence: 0.968199

00:01:04.540 --> 00:01:06.319 not I I dispute that

NOTE Confidence: 0.968199

00:01:06.380 --> 00:01:06.880 assertion.

NOTE Confidence: 0.98664165

00:01:07.565 --> 00:01:08.925 And by saying that, I

NOTE Confidence: 0.98664165

00:01:08.925 --> 00:01:10.605 would just wanna acknowledge some

NOTE Confidence: 0.98664165

00:01:10.605 --> 00:01:12.765 of the, giants that have

NOTE Confidence: 0.98664165

00:01:12.765 --> 00:01:14.385 mentored me throughout my career.

NOTE Confidence: 0.98664165

00:01:14.685 --> 00:01:15.805 And just looking back on

NOTE Confidence: 0.98664165

00:01:15.805 --> 00:01:17.725 that, how important that mentorship

NOTE Confidence: 0.98664165

00:01:17.725 --> 00:01:18.765 was. So for all of

NOTE Confidence: 0.98664165

00:01:18.765 --> 00:01:19.005 you,

NOTE Confidence: 0.9975242

00:01:19.920 --> 00:01:20.800 that are early in your

NOTE Confidence: 0.9975242

00:01:20.800 --> 00:01:21.300 careers,

NOTE Confidence: 0.93322355

00:01:21.680 --> 00:01:22.880 seek out some good mentorship

NOTE Confidence: 0.93322355

00:01:22.880 --> 00:01:24.740 here. They're such wonderful people.

NOTE Confidence: 0.93322355

00:01:24.959 --> 00:01:26.319 So Stephanie O'Malley was one

NOTE Confidence: 0.93322355

00:01:26.319 --> 00:01:27.120 of one of the folks

NOTE Confidence: 0.93322355

00:01:27.120 --> 00:01:28.740 that mentored me, Izmini Petrakas,

NOTE Confidence: 0.9394128

00:01:30.400 --> 00:01:31.920 and and some wonderful people

NOTE Confidence: 0.9394128

00:01:31.920 --> 00:01:32.880 who are no longer with

NOTE Confidence: 0.9394128

00:01:32.880 --> 00:01:34.035 us. Bob Mallison was the

NOTE Confidence: 0.9394128

00:01:34.035 --> 00:01:35.735 head of the RTP. Wonderful,

NOTE Confidence: 0.994668

00:01:36.035 --> 00:01:37.095 wonderful individual.

NOTE Confidence: 0.93390775

00:01:38.675 --> 00:01:39.875 Cathy Carroll was one of

NOTE Confidence: 0.93390775  
00:01:39.875 --> 00:01:41.075 my main mentors. And then  
NOTE Confidence: 0.93390775  
00:01:41.075 --> 00:01:41.735 I'm mentioning,  
NOTE Confidence: 0.8824501  
00:01:42.595 --> 00:01:44.375 so and Mark Mark Battenza,  
NOTE Confidence: 0.97767967  
00:01:44.675 --> 00:01:46.355 also one of my primary  
NOTE Confidence: 0.97767967  
00:01:46.355 --> 00:01:48.350 mentors. And then also, I  
NOTE Confidence: 0.97767967  
00:01:48.350 --> 00:01:49.630 had the great fortune of  
NOTE Confidence: 0.97767967  
00:01:49.630 --> 00:01:51.090 working closely with,  
NOTE Confidence: 0.9718319  
00:01:51.550 --> 00:01:53.070 this gentleman. Many of you  
NOTE Confidence: 0.9718319  
00:01:53.070 --> 00:01:54.270 don't know who this is.  
NOTE Confidence: 0.9718319  
00:01:54.270 --> 00:01:55.330 This is Bruce Roundtable.  
NOTE Confidence: 0.9615846  
00:01:56.510 --> 00:01:58.430 Wonder and I swear he  
NOTE Confidence: 0.9615846  
00:01:58.430 --> 00:01:59.950 he was more excited about  
NOTE Confidence: 0.9615846  
00:01:59.950 --> 00:02:00.450 mentorship  
NOTE Confidence: 0.98006546  
00:02:01.034 --> 00:02:01.994 than anything else. He did  
NOTE Confidence: 0.98006546  
00:02:01.994 --> 00:02:03.195 a bunch of great research,  
NOTE Confidence: 0.98006546

00:02:03.195 --> 00:02:04.395 published a bunch of stuff,  
NOTE Confidence: 0.98006546

00:02:04.395 --> 00:02:06.494 developed some really nice treatments,  
NOTE Confidence: 0.98006546

00:02:06.555 --> 00:02:07.055 and  
NOTE Confidence: 0.98198104

00:02:07.674 --> 00:02:08.875 he was all about mentorship.  
NOTE Confidence: 0.98198104

00:02:08.875 --> 00:02:09.834 So it was a real  
NOTE Confidence: 0.98198104

00:02:09.834 --> 00:02:11.514 loss to us, when when  
NOTE Confidence: 0.98198104

00:02:11.514 --> 00:02:12.495 he died suddenly.  
NOTE Confidence: 0.96355015

00:02:12.794 --> 00:02:13.675 One of the things Bruce  
NOTE Confidence: 0.96355015

00:02:13.675 --> 00:02:14.635 used to I'd sit down  
NOTE Confidence: 0.96355015

00:02:14.635 --> 00:02:16.080 in Bruce's office. This is  
NOTE Confidence: 0.96355015

00:02:16.080 --> 00:02:17.440 over at building thirty six  
NOTE Confidence: 0.96355015

00:02:17.440 --> 00:02:18.639 at the VA, and we'd  
NOTE Confidence: 0.96355015

00:02:18.639 --> 00:02:19.599 sit down with him and,  
NOTE Confidence: 0.96355015

00:02:19.599 --> 00:02:20.480 you know, have a great  
NOTE Confidence: 0.96355015

00:02:20.639 --> 00:02:21.680 something that I thought was  
NOTE Confidence: 0.96355015

00:02:21.680 --> 00:02:22.879 a great idea. And then

NOTE Confidence: 0.96355015

00:02:22.879 --> 00:02:23.919 he'd give me this big

NOTE Confidence: 0.96355015

00:02:23.919 --> 00:02:25.459 smile, and he would say,

NOTE Confidence: 0.98046905

00:02:26.000 --> 00:02:26.739 so what?

NOTE Confidence: 0.9577935

00:02:27.519 --> 00:02:28.480 And this so what and

NOTE Confidence: 0.9577935

00:02:28.480 --> 00:02:30.239 I highlight this especially for

NOTE Confidence: 0.9577935

00:02:30.239 --> 00:02:31.735 for young folks early in

NOTE Confidence: 0.9577935

00:02:31.735 --> 00:02:32.235 your

NOTE Confidence: 0.9850275

00:02:32.535 --> 00:02:34.135 careers. He was really trying

NOTE Confidence: 0.9850275

00:02:34.135 --> 00:02:35.335 to get me to ground

NOTE Confidence: 0.9850275

00:02:35.335 --> 00:02:36.855 in, like, how is this

NOTE Confidence: 0.9850275

00:02:36.855 --> 00:02:39.035 practically important for my patients?

NOTE Confidence: 0.9869037

00:02:39.495 --> 00:02:41.355 And so that's that's really

NOTE Confidence: 0.9869037

00:02:41.415 --> 00:02:43.175 helped sculpt and shaped my

NOTE Confidence: 0.9869037

00:02:43.175 --> 00:02:44.349 career over the last, you

NOTE Confidence: 0.9869037

00:02:44.349 --> 00:02:45.650 know, now twenty years.

NOTE Confidence: 0.9725518

00:02:46.190 --> 00:02:47.629 In really continuing to ask  
NOTE Confidence: 0.9725518

00:02:47.629 --> 00:02:48.669 that question, I try to  
NOTE Confidence: 0.9725518

00:02:48.669 --> 00:02:49.790 pass this down to my  
NOTE Confidence: 0.9725518

00:02:49.790 --> 00:02:51.230 students. So what? So what?  
NOTE Confidence: 0.9725518

00:02:51.230 --> 00:02:52.769 So what? Smilingly,  
NOTE Confidence: 0.9902351

00:02:53.389 --> 00:02:54.669 kindly. He he did this  
NOTE Confidence: 0.9902351

00:02:54.669 --> 00:02:55.950 with such compassion. It was  
NOTE Confidence: 0.9902351

00:02:55.950 --> 00:02:57.569 it was wonderful and contagious.  
NOTE Confidence: 0.9558366

00:02:58.590 --> 00:02:59.715 So I'm I wanna pass  
NOTE Confidence: 0.9558366

00:02:59.715 --> 00:03:00.915 some of those along today.  
NOTE Confidence: 0.9558366

00:03:00.915 --> 00:03:02.035 And what I'm I thought  
NOTE Confidence: 0.9558366

00:03:02.035 --> 00:03:02.995 I would do instead of  
NOTE Confidence: 0.9558366

00:03:02.995 --> 00:03:04.435 just giving some, you know,  
NOTE Confidence: 0.9558366

00:03:04.435 --> 00:03:05.555 dry talk, I I wanna  
NOTE Confidence: 0.9558366

00:03:05.555 --> 00:03:06.275 kind of do a little  
NOTE Confidence: 0.9558366

00:03:06.275 --> 00:03:07.175 bit of a retrospective.

NOTE Confidence: 0.968476  
00:03:08.194 --> 00:03:09.474 I but I'll start with,  
NOTE Confidence: 0.968476  
00:03:09.474 --> 00:03:10.355 you know, kind of the  
NOTE Confidence: 0.968476  
00:03:10.355 --> 00:03:11.715 so what question. But I  
NOTE Confidence: 0.968476  
00:03:11.715 --> 00:03:12.375 just wanna  
NOTE Confidence: 0.980775  
00:03:12.730 --> 00:03:14.010 pause and just for all  
NOTE Confidence: 0.980775  
00:03:14.010 --> 00:03:14.650 the folks,  
NOTE Confidence: 0.9991466  
00:03:15.130 --> 00:03:15.950 that remember  
NOTE Confidence: 0.96524215  
00:03:16.330 --> 00:03:16.830 Bruce,  
NOTE Confidence: 0.75205016  
00:03:17.290 --> 00:03:17.790 Kathy,  
NOTE Confidence: 0.9878183  
00:03:18.250 --> 00:03:19.930 Bob, and others, just a  
NOTE Confidence: 0.9878183  
00:03:19.930 --> 00:03:20.590 a real  
NOTE Confidence: 0.9770615  
00:03:21.050 --> 00:03:23.050 moment of gratitude for wonderful  
NOTE Confidence: 0.9770615  
00:03:23.050 --> 00:03:25.070 mentorship because that is not  
NOTE Confidence: 0.9770615  
00:03:25.130 --> 00:03:25.630 common,  
NOTE Confidence: 0.9572449  
00:03:26.264 --> 00:03:27.784 unfortunately. So thank you, Bruce.  
NOTE Confidence: 0.9572449

00:03:27.784 --> 00:03:29.144 Thank you, Cathy. Thank you,

NOTE Confidence: 0.9572449

00:03:29.144 --> 00:03:30.345 Bob, and thank you, Mark,

NOTE Confidence: 0.9572449

00:03:30.345 --> 00:03:30.905 and others,

NOTE Confidence: 0.93743366

00:03:31.305 --> 00:03:32.584 who continued to do great

NOTE Confidence: 0.93743366

00:03:32.584 --> 00:03:33.564 mentorship today.

NOTE Confidence: 0.96027064

00:03:34.584 --> 00:03:36.045 So I'll start with a

NOTE Confidence: 0.96027064

00:03:36.265 --> 00:03:37.625 a clinical case that that

NOTE Confidence: 0.96027064

00:03:37.625 --> 00:03:38.665 I saw a few years

NOTE Confidence: 0.96027064

00:03:38.665 --> 00:03:40.320 ago. This is a a

NOTE Confidence: 0.96027064

00:03:40.320 --> 00:03:41.520 gentleman who was referred to

NOTE Confidence: 0.96027064

00:03:41.520 --> 00:03:43.040 me for anxiety, chief complaint

NOTE Confidence: 0.96027064

00:03:43.040 --> 00:03:44.080 anxiety. He came into my

NOTE Confidence: 0.96027064

00:03:44.080 --> 00:03:45.760 office. He looked anxious, pretty

NOTE Confidence: 0.96027064

00:03:45.760 --> 00:03:46.260 straightforward.

NOTE Confidence: 0.9939308

00:03:47.200 --> 00:03:48.480 And as I started taking

NOTE Confidence: 0.9939308

00:03:48.480 --> 00:03:49.760 his history, I met all

NOTE Confidence: 0.9939308  
00:03:49.760 --> 00:03:50.340 the criteria  
NOTE Confidence: 0.97241527  
00:03:50.640 --> 00:03:52.320 for generalized anxiety disorder. He  
NOTE Confidence: 0.97241527  
00:03:52.320 --> 00:03:53.360 was forty years of age.  
NOTE Confidence: 0.97241527  
00:03:53.520 --> 00:03:54.320 When he came to see  
NOTE Confidence: 0.97241527  
00:03:54.320 --> 00:03:56.105 me, he'd had he could  
NOTE Confidence: 0.97241527  
00:03:56.105 --> 00:03:57.625 probably trace that back to  
NOTE Confidence: 0.97241527  
00:03:57.625 --> 00:03:59.144 about fifth grade where he  
NOTE Confidence: 0.97241527  
00:03:59.144 --> 00:03:59.805 had started,  
NOTE Confidence: 0.9787628  
00:04:00.345 --> 00:04:02.345 getting panic attacks and, getting  
NOTE Confidence: 0.9787628  
00:04:02.345 --> 00:04:03.465 really anxious. And in fact,  
NOTE Confidence: 0.9787628  
00:04:03.465 --> 00:04:04.425 he met all the criteria  
NOTE Confidence: 0.9787628  
00:04:04.425 --> 00:04:05.864 for generalized anxiety disorder as  
NOTE Confidence: 0.9787628  
00:04:05.864 --> 00:04:07.004 well as panic disorder.  
NOTE Confidence: 0.9995516  
00:04:07.385 --> 00:04:08.444 On top of that,  
NOTE Confidence: 0.98682463  
00:04:08.905 --> 00:04:10.800 he was four hundred pounds.  
NOTE Confidence: 0.9841131

00:04:11.360 --> 00:04:12.320 And so it had some  
NOTE Confidence: 0.9841131

00:04:12.320 --> 00:04:14.000 medical issues related to it  
NOTE Confidence: 0.9841131

00:04:14.000 --> 00:04:15.940 that were contributing to his  
NOTE Confidence: 0.9841131

00:04:16.000 --> 00:04:17.279 medical anxiety. So a lot  
NOTE Confidence: 0.9841131

00:04:17.279 --> 00:04:18.160 of a lot of this  
NOTE Confidence: 0.9841131

00:04:18.160 --> 00:04:19.839 stuff, was really compounding for  
NOTE Confidence: 0.9841131

00:04:19.839 --> 00:04:20.339 him.  
NOTE Confidence: 0.93000203

00:04:20.800 --> 00:04:22.640 So I I use this  
NOTE Confidence: 0.93000203

00:04:22.640 --> 00:04:23.140 cartoon,  
NOTE Confidence: 0.9646657

00:04:23.935 --> 00:04:25.214 because, you know, as as  
NOTE Confidence: 0.9646657

00:04:25.214 --> 00:04:26.175 many of you know or  
NOTE Confidence: 0.9646657

00:04:26.175 --> 00:04:27.535 or learning, even the best  
NOTE Confidence: 0.9646657

00:04:27.535 --> 00:04:28.895 medications we have out there,  
NOTE Confidence: 0.9646657

00:04:29.135 --> 00:04:30.195 for example, SSRIs,  
NOTE Confidence: 0.97544116

00:04:30.735 --> 00:04:31.855 number needed to treat is  
NOTE Confidence: 0.97544116

00:04:31.855 --> 00:04:33.555 five point two. And so

NOTE Confidence: 0.97544116

00:04:33.775 --> 00:04:34.975 when I walk into clinic,

NOTE Confidence: 0.97544116

00:04:34.975 --> 00:04:36.415 I'm play basically playing the

NOTE Confidence: 0.97544116

00:04:36.415 --> 00:04:37.935 medication lottery. You know, which

NOTE Confidence: 0.97544116

00:04:37.935 --> 00:04:39.670 which one in five of

NOTE Confidence: 0.97544116

00:04:39.670 --> 00:04:40.630 the next five patients that

NOTE Confidence: 0.97544116

00:04:40.630 --> 00:04:41.350 I see are gonna show

NOTE Confidence: 0.97544116

00:04:41.350 --> 00:04:42.970 a significant reduction in symptoms,

NOTE Confidence: 0.97544116

00:04:43.110 --> 00:04:43.830 and what am I gonna

NOTE Confidence: 0.97544116

00:04:43.830 --> 00:04:44.890 do with the other four?

NOTE Confidence: 0.936035

00:04:45.750 --> 00:04:46.950 On top of that, and

NOTE Confidence: 0.936035

00:04:46.950 --> 00:04:48.390 this is now outdated, about

NOTE Confidence: 0.936035

00:04:48.390 --> 00:04:49.830 almost ten years old now,

NOTE Confidence: 0.936035

00:04:50.150 --> 00:04:51.430 but just looking at our

NOTE Confidence: 0.936035

00:04:51.430 --> 00:04:52.950 obesity epidemic. So we can

NOTE Confidence: 0.936035

00:04:52.950 --> 00:04:54.895 say, oh, we develop a

NOTE Confidence: 0.936035

00:04:54.895 --> 00:04:55.615 lot of treat. This is  
NOTE Confidence: 0.936035

00:04:55.615 --> 00:04:56.895 all obviously pre,  
NOTE Confidence: 0.95403224

00:04:57.295 --> 00:04:58.575 GLP one drugs, but I'm  
NOTE Confidence: 0.95403224

00:04:58.575 --> 00:04:59.695 not sure that you know,  
NOTE Confidence: 0.95403224

00:04:59.695 --> 00:05:00.895 they certainly have been a  
NOTE Confidence: 0.95403224

00:05:00.895 --> 00:05:01.935 a quantum leap forward, but  
NOTE Confidence: 0.95403224

00:05:01.935 --> 00:05:02.815 I'm not sure that they're  
NOTE Confidence: 0.95403224

00:05:02.815 --> 00:05:03.875 gonna be our saviors.  
NOTE Confidence: 0.9729135

00:05:04.495 --> 00:05:05.455 But we can say, well,  
NOTE Confidence: 0.9729135

00:05:05.455 --> 00:05:06.779 we, you know, we should  
NOTE Confidence: 0.9729135

00:05:06.779 --> 00:05:07.900 be able to help people  
NOTE Confidence: 0.9729135

00:05:07.900 --> 00:05:08.860 with with,  
NOTE Confidence: 0.9850475

00:05:09.180 --> 00:05:11.100 clinically clinical obesity at this  
NOTE Confidence: 0.9850475

00:05:11.100 --> 00:05:13.040 point. But even looking back,  
NOTE Confidence: 0.9850475

00:05:13.339 --> 00:05:14.460 not sure that we've nailed  
NOTE Confidence: 0.9850475

00:05:14.460 --> 00:05:15.440 that either.

NOTE Confidence: 0.957185

00:05:16.140 --> 00:05:17.260 So what I'm how I'm

NOTE Confidence: 0.957185

00:05:17.260 --> 00:05:18.779 gonna approach this talk today

NOTE Confidence: 0.957185

00:05:18.779 --> 00:05:19.820 is I like this quote

NOTE Confidence: 0.957185

00:05:19.820 --> 00:05:21.100 attributed to Einstein where he

NOTE Confidence: 0.957185

00:05:21.100 --> 00:05:21.980 says no problem can be

NOTE Confidence: 0.957185

00:05:21.980 --> 00:05:23.515 solved from the same level

NOTE Confidence: 0.957185

00:05:23.515 --> 00:05:24.990 of consciousness that created it.

NOTE Confidence: 0.957185

00:05:24.990 --> 00:05:26.761 And, you know, highlighting, Oprah

NOTE Confidence: 0.957185

00:05:26.761 --> 00:05:28.532 who said you know, she

NOTE Confidence: 0.957185

00:05:28.532 --> 00:05:30.302 said, I've been I realized

NOTE Confidence: 0.957185

00:05:30.302 --> 00:05:31.778 I've been blaming myself all

NOTE Confidence: 0.957185

00:05:31.778 --> 00:05:33.253 these years for being overweight,

NOTE Confidence: 0.957185

00:05:33.253 --> 00:05:35.024 and I've had predisposition predisposition

NOTE Confidence: 0.957185

00:05:35.024 --> 00:05:36.499 that no amount of willpower

NOTE Confidence: 0.957185

00:05:36.499 --> 00:05:38.080 is going to control. So

NOTE Confidence: 0.957185

00:05:38.080 --> 00:05:39.759 I really wanna focus on  
NOTE Confidence: 0.957185

00:05:39.759 --> 00:05:40.339 a lot  
NOTE Confidence: 0.997779

00:05:40.960 --> 00:05:42.580 of dogma out there,  
NOTE Confidence: 0.978979

00:05:43.039 --> 00:05:44.639 that and even some that  
NOTE Confidence: 0.978979

00:05:44.639 --> 00:05:46.400 was that I learned,  
NOTE Confidence: 0.93160576

00:05:46.720 --> 00:05:47.860 in part of my residency  
NOTE Confidence: 0.93160576

00:05:47.919 --> 00:05:48.419 training,  
NOTE Confidence: 0.96720105

00:05:49.039 --> 00:05:50.080 was, you know, like, we  
NOTE Confidence: 0.96720105

00:05:50.080 --> 00:05:51.520 just need to willpower our  
NOTE Confidence: 0.96720105

00:05:51.520 --> 00:05:52.915 way through whatever it is,  
NOTE Confidence: 0.96720105

00:05:52.915 --> 00:05:54.195 whether it's anxiety, whether it's  
NOTE Confidence: 0.96720105

00:05:54.195 --> 00:05:55.955 an addiction, whether it's with  
NOTE Confidence: 0.96720105

00:05:56.035 --> 00:05:57.235 whether it's eating, you know,  
NOTE Confidence: 0.96720105

00:05:57.235 --> 00:05:59.235 picking the croissants as compared  
NOTE Confidence: 0.96720105

00:05:59.235 --> 00:06:00.375 to the keto friendly,  
NOTE Confidence: 0.9671292

00:06:02.755 --> 00:06:03.955 egg things that were actually

NOTE Confidence: 0.9671292

00:06:03.955 --> 00:06:05.070 pretty tasty out there.

NOTE Confidence: 0.9967593

00:06:05.550 --> 00:06:06.430 And one thing I wanna

NOTE Confidence: 0.9967593

00:06:06.430 --> 00:06:08.029 highlight is that there's a

NOTE Confidence: 0.9967593

00:06:08.029 --> 00:06:10.130 lot of great neuroscience research

NOTE Confidence: 0.9967593

00:06:10.190 --> 00:06:12.190 showing that, for example, cognitive

NOTE Confidence: 0.9967593

00:06:12.190 --> 00:06:12.690 therapies

NOTE Confidence: 0.97238296

00:06:13.230 --> 00:06:15.390 seem to center around the

NOTE Confidence: 0.97238296

00:06:15.390 --> 00:06:16.750 prefrontal cortex, whether it's the

NOTE Confidence: 0.97238296

00:06:16.750 --> 00:06:18.270 dorsal lateral prefrontal cortex or

NOTE Confidence: 0.97238296

00:06:18.270 --> 00:06:19.410 other parts of the brain

NOTE Confidence: 0.97238296

00:06:19.645 --> 00:06:20.224 that have

NOTE Confidence: 0.99036354

00:06:20.685 --> 00:06:21.264 been associated

NOTE Confidence: 0.9677041

00:06:21.724 --> 00:06:23.645 with cognitive behavioral therapy, this

NOTE Confidence: 0.9677041

00:06:23.645 --> 00:06:24.145 prefrontal

NOTE Confidence: 0.98907226

00:06:24.764 --> 00:06:26.044 cortex of ours is the

NOTE Confidence: 0.98907226

00:06:26.044 --> 00:06:27.645 youngest and the weakest part  
NOTE Confidence: 0.98907226

00:06:27.645 --> 00:06:28.525 of our brain from an  
NOTE Confidence: 0.98907226

00:06:28.525 --> 00:06:29.745 evolutionary perspective.  
NOTE Confidence: 0.96683073

00:06:30.604 --> 00:06:32.430 So, you know, there many  
NOTE Confidence: 0.96683073

00:06:32.430 --> 00:06:33.230 of you have heard the  
NOTE Confidence: 0.96683073

00:06:33.230 --> 00:06:34.910 acronym HALT, hungry, angry, lonely,  
NOTE Confidence: 0.96683073

00:06:34.910 --> 00:06:36.190 tired. This is when people  
NOTE Confidence: 0.96683073

00:06:36.190 --> 00:06:37.170 tend to relapse,  
NOTE Confidence: 0.9943868

00:06:37.630 --> 00:06:40.029 to substance use, etcetera, where  
NOTE Confidence: 0.9943868

00:06:40.029 --> 00:06:41.550 their prefrontal cortex is going  
NOTE Confidence: 0.9943868

00:06:41.550 --> 00:06:43.150 offline. So why are we  
NOTE Confidence: 0.9943868

00:06:43.150 --> 00:06:44.830 spending all this energy trying  
NOTE Confidence: 0.9943868

00:06:44.830 --> 00:06:45.330 to  
NOTE Confidence: 0.99877673

00:06:45.964 --> 00:06:47.085 get people to use the  
NOTE Confidence: 0.99877673

00:06:47.085 --> 00:06:48.444 weakest part of their brain  
NOTE Confidence: 0.99877673

00:06:48.444 --> 00:06:49.504 to change behavior?

NOTE Confidence: 0.96692204  
00:06:50.285 --> 00:06:51.805 So I started asking that  
NOTE Confidence: 0.96692204  
00:06:51.805 --> 00:06:53.185 question myself and  
NOTE Confidence: 0.95326424  
00:06:53.565 --> 00:06:54.685 opening up and asking, well,  
NOTE Confidence: 0.95326424  
00:06:54.685 --> 00:06:55.964 is there anything else that  
NOTE Confidence: 0.95326424  
00:06:55.964 --> 00:06:56.625 we can  
NOTE Confidence: 0.99830484  
00:06:57.085 --> 00:06:57.585 explore  
NOTE Confidence: 0.9885607  
00:06:58.699 --> 00:06:59.580 you know, that might help  
NOTE Confidence: 0.9885607  
00:06:59.580 --> 00:07:00.300 as well? And can we  
NOTE Confidence: 0.9885607  
00:07:00.300 --> 00:07:01.660 study this? And, you know,  
NOTE Confidence: 0.9885607  
00:07:01.660 --> 00:07:03.040 going back to basic principles,  
NOTE Confidence: 0.9519063  
00:07:03.900 --> 00:07:05.279 if you look at reinforcement  
NOTE Confidence: 0.9519063  
00:07:05.580 --> 00:07:06.940 learning, you know, Eric Kendall  
NOTE Confidence: 0.9519063  
00:07:06.940 --> 00:07:08.300 got the Nobel Prize showing  
NOTE Confidence: 0.9519063  
00:07:08.380 --> 00:07:09.419 back in two thousand, showing  
NOTE Confidence: 0.9519063  
00:07:09.419 --> 00:07:11.020 that this is evolutionarily conserved  
NOTE Confidence: 0.9519063

00:07:11.020 --> 00:07:11.660 all the way back to  
NOTE Confidence: 0.9519063

00:07:11.660 --> 00:07:13.125 the sea slug. We know  
NOTE Confidence: 0.9519063

00:07:13.125 --> 00:07:15.225 a lot about how these,  
NOTE Confidence: 0.94228375

00:07:16.085 --> 00:07:17.845 these habits, these addictions get  
NOTE Confidence: 0.94228375

00:07:17.845 --> 00:07:18.805 set up when I'm just  
NOTE Confidence: 0.94228375

00:07:18.805 --> 00:07:20.245 using smoking and and eating  
NOTE Confidence: 0.94228375

00:07:20.245 --> 00:07:21.605 as examples. But if you  
NOTE Confidence: 0.94228375

00:07:21.605 --> 00:07:22.405 look at some of these  
NOTE Confidence: 0.94228375

00:07:22.405 --> 00:07:23.685 references, this has been known.  
NOTE Confidence: 0.94228375

00:07:23.685 --> 00:07:24.985 You know, Thor Ed Thorndike,  
NOTE Confidence: 0.9735474

00:07:25.365 --> 00:07:26.345 published the first,  
NOTE Confidence: 0.99260986

00:07:27.260 --> 00:07:28.380 animal study back in the  
NOTE Confidence: 0.99260986

00:07:28.380 --> 00:07:29.200 eighteen hundreds.  
NOTE Confidence: 0.9623723

00:07:29.980 --> 00:07:30.800 This is where,  
NOTE Confidence: 0.9957553

00:07:32.060 --> 00:07:32.620 you know,  
NOTE Confidence: 0.9609773

00:07:33.180 --> 00:07:34.380 all the all the, you

NOTE Confidence: 0.9609773

00:07:34.380 --> 00:07:36.620 know, famous Skinner became famous

NOTE Confidence: 0.9609773

00:07:36.620 --> 00:07:37.580 in the fifties. All of

NOTE Confidence: 0.9609773

00:07:37.580 --> 00:07:38.700 this stuff has really you

NOTE Confidence: 0.9609773

00:07:38.700 --> 00:07:40.220 know, nothing has has been

NOTE Confidence: 0.9609773

00:07:40.220 --> 00:07:41.805 disproven here. It's only been

NOTE Confidence: 0.9915057

00:07:42.365 --> 00:07:42.865 reinforced.

NOTE Confidence: 0.9717554

00:07:43.485 --> 00:07:44.365 And so I can ask

NOTE Confidence: 0.9717554

00:07:44.365 --> 00:07:45.565 myself when I'm in clinic

NOTE Confidence: 0.9717554

00:07:45.565 --> 00:07:46.365 if I have a patient

NOTE Confidence: 0.9717554

00:07:46.365 --> 00:07:47.905 who's struggling, you know,

NOTE Confidence: 0.8504557

00:07:48.285 --> 00:07:48.785 mechanistically,

NOTE Confidence: 0.99313545

00:07:49.164 --> 00:07:50.365 what's going on here? Can

NOTE Confidence: 0.99313545

00:07:50.365 --> 00:07:51.585 this help me understand,

NOTE Confidence: 0.98721844

00:07:52.685 --> 00:07:54.300 why they're struggling? And can

NOTE Confidence: 0.98721844

00:07:54.300 --> 00:07:55.820 we approach things you know,

NOTE Confidence: 0.98721844

00:07:55.820 --> 00:07:57.100 how are we approaching things?

NOTE Confidence: 0.98721844

00:07:57.100 --> 00:07:57.980 Is that the best way

NOTE Confidence: 0.98721844

00:07:57.980 --> 00:07:58.880 to approach things?

NOTE Confidence: 0.9629988

00:07:59.340 --> 00:08:01.420 So for example, patients with

NOTE Confidence: 0.9629988

00:08:01.420 --> 00:08:02.700 alcohol use disorder, you know,

NOTE Confidence: 0.9629988

00:08:02.700 --> 00:08:04.220 there's this saying, I learned

NOTE Confidence: 0.9629988

00:08:04.220 --> 00:08:04.940 it from one of my

NOTE Confidence: 0.9629988

00:08:04.940 --> 00:08:06.300 patients, people, places, and things.

NOTE Confidence: 0.9629988

00:08:06.300 --> 00:08:07.725 And somebody actually corrected me

NOTE Confidence: 0.9629988

00:08:07.725 --> 00:08:09.025 that that's not an official

NOTE Confidence: 0.9629988

00:08:09.165 --> 00:08:10.845 AA thing. That was something

NOTE Confidence: 0.9629988

00:08:10.845 --> 00:08:11.805 that he had learned in

NOTE Confidence: 0.9629988

00:08:11.805 --> 00:08:13.085 his AA group. But you

NOTE Confidence: 0.9629988

00:08:13.085 --> 00:08:14.384 can look at this mechanistically

NOTE Confidence: 0.9629988

00:08:14.525 --> 00:08:15.725 and, you know, it's it

NOTE Confidence: 0.9629988

00:08:15.725 --> 00:08:17.405 makes, makes sense if we

NOTE Confidence: 0.9629988  
00:08:17.405 --> 00:08:18.445 avoid the bar, if we  
NOTE Confidence: 0.9629988  
00:08:18.445 --> 00:08:20.460 avoid the the liquor store,  
NOTE Confidence: 0.9629988  
00:08:20.460 --> 00:08:21.420 if we avoid our drinking  
NOTE Confidence: 0.9629988  
00:08:21.420 --> 00:08:22.700 buddies, we're less likely to  
NOTE Confidence: 0.9629988  
00:08:22.700 --> 00:08:23.820 drink. And so you can  
NOTE Confidence: 0.9629988  
00:08:23.820 --> 00:08:25.580 place that mechanistically and say,  
NOTE Confidence: 0.9629988  
00:08:25.580 --> 00:08:26.800 okay, if we avoid queues,  
NOTE Confidence: 0.9629988  
00:08:26.860 --> 00:08:28.140 we're less likely to get  
NOTE Confidence: 0.9629988  
00:08:28.140 --> 00:08:29.340 triggered to do whatever the  
NOTE Confidence: 0.9629988  
00:08:29.340 --> 00:08:30.160 behavior is.  
NOTE Confidence: 0.99962604  
00:08:30.540 --> 00:08:31.980 If it's smoking, it's a  
NOTE Confidence: 0.99962604  
00:08:31.980 --> 00:08:33.200 little more challenging  
NOTE Confidence: 0.9960433  
00:08:33.704 --> 00:08:34.824 to avoid. If you smoke  
NOTE Confidence: 0.9960433  
00:08:34.824 --> 00:08:35.704 a pack of cigarettes a  
NOTE Confidence: 0.9960433  
00:08:35.704 --> 00:08:36.584 day, it's a little more  
NOTE Confidence: 0.9960433

00:08:36.584 --> 00:08:37.084 challenging  
NOTE Confidence: 0.9544499

00:08:37.464 --> 00:08:38.824 to avoid all those twenty  
NOTE Confidence: 0.9544499

00:08:38.824 --> 00:08:40.345 things, you know, time of  
NOTE Confidence: 0.9544499

00:08:40.345 --> 00:08:42.764 day, place, car, you know,  
NOTE Confidence: 0.9544499

00:08:42.985 --> 00:08:44.444 and, and even smoking buddies.  
NOTE Confidence: 0.9544499

00:08:44.505 --> 00:08:46.020 So, you know, there's what  
NOTE Confidence: 0.9544499

00:08:46.020 --> 00:08:47.060 one thing I was taught  
NOTE Confidence: 0.9544499

00:08:47.060 --> 00:08:48.600 was, well, let's provide substitution  
NOTE Confidence: 0.97010964

00:08:49.300 --> 00:08:50.920 strategies. You know, eat some  
NOTE Confidence: 0.97010964

00:08:51.060 --> 00:08:52.580 carrot sticks instead of smoking  
NOTE Confidence: 0.97010964

00:08:52.580 --> 00:08:53.880 a cigarette, do some distraction,  
NOTE Confidence: 0.98905873

00:08:54.340 --> 00:08:55.380 etcetera. And these are just  
NOTE Confidence: 0.98905873

00:08:55.380 --> 00:08:56.420 some, you know, there's been  
NOTE Confidence: 0.98905873

00:08:56.420 --> 00:08:57.300 a lot of great work,  
NOTE Confidence: 0.98905873

00:08:57.300 --> 00:08:58.420 a lot of it grounded  
NOTE Confidence: 0.98905873

00:08:58.420 --> 00:08:59.640 here, you know, in contingency

NOTE Confidence: 0.98905873

00:08:59.780 --> 00:09:00.900 management and other things. I'm

NOTE Confidence: 0.98905873

00:09:00.900 --> 00:09:02.175 not gonna speak about those

NOTE Confidence: 0.98905873

00:09:02.175 --> 00:09:02.675 today.

NOTE Confidence: 0.9751927

00:09:03.054 --> 00:09:04.095 There can be some really

NOTE Confidence: 0.9751927

00:09:04.095 --> 00:09:05.875 useful strategies that help,

NOTE Confidence: 0.98814374

00:09:06.975 --> 00:09:08.035 yet it's unclear

NOTE Confidence: 0.9682073

00:09:08.415 --> 00:09:09.934 how, you know, if we

NOTE Confidence: 0.9682073

00:09:09.934 --> 00:09:11.135 bring it back to basic

NOTE Confidence: 0.9682073

00:09:11.135 --> 00:09:11.635 principles,

NOTE Confidence: 0.98450124

00:09:12.015 --> 00:09:12.975 how all of these line

NOTE Confidence: 0.98450124

00:09:12.975 --> 00:09:14.650 up. So for example, with

NOTE Confidence: 0.98450124

00:09:14.650 --> 00:09:17.150 avoiding cues or substitution behaviors,

NOTE Confidence: 0.98450124

00:09:17.210 --> 00:09:18.970 you're not actually dismantling this

NOTE Confidence: 0.98450124

00:09:18.970 --> 00:09:20.170 core loop, whether it's negative

NOTE Confidence: 0.98450124

00:09:20.170 --> 00:09:21.870 reinforcement or positive reinforcement.

NOTE Confidence: 0.9185405

00:09:22.809 --> 00:09:24.090 So for those of you  
NOTE Confidence: 0.9185405

00:09:24.090 --> 00:09:26.330 sleep deprive residents here today,  
NOTE Confidence: 0.9185405

00:09:26.330 --> 00:09:27.530 just remember three things, you  
NOTE Confidence: 0.9185405

00:09:27.530 --> 00:09:28.270 know, trigger  
NOTE Confidence: 0.9715623

00:09:28.684 --> 00:09:30.285 a behavior, and a result,  
NOTE Confidence: 0.9715623

00:09:30.285 --> 00:09:31.165 or a reward from a  
NOTE Confidence: 0.9715623

00:09:31.165 --> 00:09:32.845 neuroscience standpoint. That's how all  
NOTE Confidence: 0.9715623

00:09:32.845 --> 00:09:34.445 habits get set up. And  
NOTE Confidence: 0.9715623

00:09:34.445 --> 00:09:35.644 these were set up as  
NOTE Confidence: 0.9715623

00:09:35.644 --> 00:09:37.165 survival strategies. This helped us  
NOTE Confidence: 0.9715623

00:09:37.165 --> 00:09:38.285 remember where food was so  
NOTE Confidence: 0.9715623

00:09:38.285 --> 00:09:38.925 we could go to it  
NOTE Confidence: 0.9715623

00:09:38.925 --> 00:09:40.045 again, get to those food  
NOTE Confidence: 0.9715623

00:09:40.045 --> 00:09:41.644 sources, and also remember where  
NOTE Confidence: 0.9715623

00:09:41.644 --> 00:09:42.684 danger was so we could  
NOTE Confidence: 0.9715623

00:09:42.684 --> 00:09:43.425 avoid it.

NOTE Confidence: 0.98283  
00:09:44.690 --> 00:09:45.830 So how is this being  
NOTE Confidence: 0.98283  
00:09:45.890 --> 00:09:47.730 used in modern day? Well,  
NOTE Confidence: 0.98283  
00:09:47.730 --> 00:09:49.090 the the food industry certainly  
NOTE Confidence: 0.98283  
00:09:49.090 --> 00:09:50.370 knows how to use these  
NOTE Confidence: 0.98283  
00:09:50.370 --> 00:09:51.570 things. There's a great,  
NOTE Confidence: 0.9883311  
00:09:52.770 --> 00:09:53.990 there's a great article,  
NOTE Confidence: 0.9533299  
00:09:54.530 --> 00:09:55.970 back over ten years ago  
NOTE Confidence: 0.9533299  
00:09:55.970 --> 00:09:56.775 now in the New York  
NOTE Confidence: 0.9533299  
00:09:56.855 --> 00:09:58.215 Times just highlighting all the  
NOTE Confidence: 0.9533299  
00:09:58.215 --> 00:09:59.655 different ways that food like  
NOTE Confidence: 0.9533299  
00:09:59.655 --> 00:10:00.715 objects get engineered  
NOTE Confidence: 0.9580045  
00:10:01.095 --> 00:10:02.135 to be addictive. I like  
NOTE Confidence: 0.9580045  
00:10:02.135 --> 00:10:03.195 that they use the Doritos  
NOTE Confidence: 0.9580045  
00:10:03.255 --> 00:10:04.135 as the cover art for  
NOTE Confidence: 0.9580045  
00:10:04.135 --> 00:10:04.795 their article,  
NOTE Confidence: 0.9589332

00:10:05.175 --> 00:10:06.615 because my favorite peer reviewed

NOTE Confidence: 0.9589332

00:10:06.615 --> 00:10:07.675 journal, The Onion,

NOTE Confidence: 0.941995

00:10:08.850 --> 00:10:10.130 they had a, the headline

NOTE Confidence: 0.941995

00:10:10.130 --> 00:10:11.889 that says Doritos celebrates its

NOTE Confidence: 0.941995

00:10:11.889 --> 00:10:13.110 one millionth ingredient.

NOTE Confidence: 0.96088445

00:10:14.850 --> 00:10:15.350 And

NOTE Confidence: 0.9350416

00:10:16.370 --> 00:10:17.730 and I wanna say that

NOTE Confidence: 0.9350416

00:10:17.730 --> 00:10:19.009 it was actually Chris Pittenger

NOTE Confidence: 0.9350416

00:10:19.009 --> 00:10:19.970 that taught me that line,

NOTE Confidence: 0.9350416

00:10:19.970 --> 00:10:21.329 my favorite peer reviewed journal.

NOTE Confidence: 0.9350416

00:10:21.329 --> 00:10:22.050 He used to say my

NOTE Confidence: 0.9350416

00:10:22.050 --> 00:10:23.170 favorite peer reviewed journal, The

NOTE Confidence: 0.9350416

00:10:23.170 --> 00:10:24.050 New York Times, if I

NOTE Confidence: 0.9350416

00:10:24.050 --> 00:10:26.095 remember. It correctly. So thank

NOTE Confidence: 0.9350416

00:10:26.095 --> 00:10:27.075 you, Chris, for that.

NOTE Confidence: 0.99169827

00:10:27.774 --> 00:10:28.735 But we we see this

NOTE Confidence: 0.99169827

00:10:28.735 --> 00:10:30.015 with food. We see this

NOTE Confidence: 0.99169827

00:10:30.015 --> 00:10:31.075 with social media.

NOTE Confidence: 0.9927835

00:10:31.454 --> 00:10:33.135 You know, they're employing literally

NOTE Confidence: 0.9927835

00:10:33.135 --> 00:10:34.815 thousands of neuroscientists to get

NOTE Confidence: 0.9927835

00:10:34.815 --> 00:10:36.334 us addicted to these things.

NOTE Confidence: 0.9927835

00:10:36.334 --> 00:10:37.535 So the question is, well,

NOTE Confidence: 0.9927835

00:10:37.535 --> 00:10:39.135 if somebody knows how this

NOTE Confidence: 0.9927835

00:10:39.135 --> 00:10:40.115 process works,

NOTE Confidence: 0.93978345

00:10:40.540 --> 00:10:42.240 why aren't we in medicine

NOTE Confidence: 0.9315891

00:10:42.860 --> 00:10:44.540 exploring these same processes and

NOTE Confidence: 0.9315891

00:10:44.540 --> 00:10:46.700 leveraging them? And this is

NOTE Confidence: 0.9315891

00:10:46.700 --> 00:10:47.200 where,

NOTE Confidence: 0.9514389

00:10:47.820 --> 00:10:49.740 I kind of went off

NOTE Confidence: 0.9514389

00:10:49.740 --> 00:10:52.380 the, the the the straight

NOTE Confidence: 0.9514389

00:10:52.380 --> 00:10:54.059 and narrow. When I was

NOTE Confidence: 0.9514389

00:10:54.059 --> 00:10:55.335 first starting my career, I  
NOTE Confidence: 0.9514389

00:10:55.735 --> 00:10:57.015 done a lot of molecular  
NOTE Confidence: 0.9514389

00:10:57.015 --> 00:10:59.275 biology research, during my PhD  
NOTE Confidence: 0.9514389

00:10:59.335 --> 00:11:01.095 years and then wanted to  
NOTE Confidence: 0.9514389

00:11:01.095 --> 00:11:02.535 wanted to actually try something  
NOTE Confidence: 0.9514389

00:11:02.535 --> 00:11:03.035 different.  
NOTE Confidence: 0.96106404

00:11:03.575 --> 00:11:05.175 And I remember Bruce explicit  
NOTE Confidence: 0.96106404

00:11:05.255 --> 00:11:06.775 Bruce Brownsville explicitly saying to  
NOTE Confidence: 0.96106404

00:11:06.775 --> 00:11:07.735 me, you know, he said,  
NOTE Confidence: 0.96106404

00:11:07.735 --> 00:11:08.535 I don't care what you  
NOTE Confidence: 0.96106404

00:11:08.535 --> 00:11:09.175 do as long as you  
NOTE Confidence: 0.96106404

00:11:09.175 --> 00:11:10.080 do it well. You know?  
NOTE Confidence: 0.96106404

00:11:10.080 --> 00:11:11.040 And and he was there  
NOTE Confidence: 0.96106404

00:11:11.040 --> 00:11:11.920 to help guide me to  
NOTE Confidence: 0.96106404

00:11:11.920 --> 00:11:13.360 make sure that that I  
NOTE Confidence: 0.96106404

00:11:13.360 --> 00:11:14.640 was I was doing my

NOTE Confidence: 0.96106404

00:11:14.640 --> 00:11:16.100 research in a very scientifically

NOTE Confidence: 0.96106404

00:11:16.160 --> 00:11:17.360 sound way. So I said,

NOTE Confidence: 0.96106404

00:11:17.360 --> 00:11:18.660 well, I wanna study mindfulness

NOTE Confidence: 0.96106404

00:11:18.720 --> 00:11:20.080 training. I should have put

NOTE Confidence: 0.96106404

00:11:20.080 --> 00:11:21.120 this in my disclosure. I

NOTE Confidence: 0.96106404

00:11:21.120 --> 00:11:22.559 had been meditating starting in

NOTE Confidence: 0.96106404

00:11:22.559 --> 00:11:23.440 medical school, and so I

NOTE Confidence: 0.96106404

00:11:23.440 --> 00:11:24.080 was like, well, it was

NOTE Confidence: 0.96106404

00:11:24.080 --> 00:11:25.304 kinda helpful for me and

NOTE Confidence: 0.96106404

00:11:25.385 --> 00:11:26.105 taught me some things that

NOTE Confidence: 0.96106404

00:11:26.105 --> 00:11:27.464 I didn't learn during medical

NOTE Confidence: 0.96106404

00:11:27.464 --> 00:11:28.585 school. So let's let's study

NOTE Confidence: 0.96106404

00:11:28.585 --> 00:11:29.625 this. And at the time,

NOTE Confidence: 0.96106404

00:11:29.625 --> 00:11:29.945 the,

NOTE Confidence: 0.98337173

00:11:31.785 --> 00:11:33.545 this there was nothing published.

NOTE Confidence: 0.98337173

00:11:33.545 --> 00:11:34.585 It was, you know, can  
NOTE Confidence: 0.98337173

00:11:35.065 --> 00:11:37.404 candles, unicorns, you know, incense.  
NOTE Confidence: 0.98337173

00:11:37.464 --> 00:11:38.505 That's how people thought of  
NOTE Confidence: 0.98337173

00:11:38.505 --> 00:11:39.005 mindfulness.  
NOTE Confidence: 0.9067207

00:11:39.699 --> 00:11:40.360 And, actually,  
NOTE Confidence: 0.9575859

00:11:40.899 --> 00:11:42.980 somebody in my residency class  
NOTE Confidence: 0.9575859

00:11:42.980 --> 00:11:44.019 here said to me, they  
NOTE Confidence: 0.9575859

00:11:44.019 --> 00:11:45.220 said, you're gonna kill your  
NOTE Confidence: 0.9575859

00:11:45.220 --> 00:11:46.339 career if you study this  
NOTE Confidence: 0.9575859

00:11:46.339 --> 00:11:47.300 stuff because it's so woo  
NOTE Confidence: 0.9575859

00:11:47.300 --> 00:11:48.899 woo. And I I thought,  
NOTE Confidence: 0.9575859

00:11:48.899 --> 00:11:49.399 well,  
NOTE Confidence: 0.97970897

00:11:49.779 --> 00:11:50.820 I'm really interested in this.  
NOTE Confidence: 0.97970897

00:11:50.820 --> 00:11:51.940 I'd rather give this a  
NOTE Confidence: 0.97970897

00:11:51.940 --> 00:11:53.985 go and and risk failing  
NOTE Confidence: 0.97970897

00:11:54.045 --> 00:11:55.404 than, you know, continuing along

NOTE Confidence: 0.97970897

00:11:55.404 --> 00:11:56.365 the path that that I

NOTE Confidence: 0.97970897

00:11:56.365 --> 00:11:57.324 could you know, I had

NOTE Confidence: 0.97970897

00:11:57.324 --> 00:11:58.605 done before and and was

NOTE Confidence: 0.97970897

00:11:58.605 --> 00:11:59.105 fine.

NOTE Confidence: 0.9655784

00:11:59.725 --> 00:12:01.964 So studying mindfulness, this is

NOTE Confidence: 0.9655784

00:12:01.964 --> 00:12:03.404 now much more popular, you

NOTE Confidence: 0.9655784

00:12:03.404 --> 00:12:04.684 know, twenty years later. But

NOTE Confidence: 0.9655784

00:12:04.684 --> 00:12:05.485 back in the day, people

NOTE Confidence: 0.9655784

00:12:05.485 --> 00:12:06.444 didn't even know what it

NOTE Confidence: 0.9655784

00:12:06.444 --> 00:12:08.339 was. And so John Kabat

NOTE Confidence: 0.9655784

00:12:08.339 --> 00:12:09.640 Zinn up at at UMass,

NOTE Confidence: 0.9156632

00:12:10.019 --> 00:12:11.700 medical head coined this term

NOTE Confidence: 0.9156632

00:12:11.700 --> 00:12:12.820 back in the late nineteen

NOTE Confidence: 0.9156632

00:12:12.820 --> 00:12:14.500 seventies where he described mindfulness

NOTE Confidence: 0.9156632

00:12:14.500 --> 00:12:15.860 as paying attention in the

NOTE Confidence: 0.9156632

00:12:15.860 --> 00:12:17.140 present moment on purpose and  
NOTE Confidence: 0.9156632

00:12:17.140 --> 00:12:17.640 nonjudgmentally.  
NOTE Confidence: 0.9989904

00:12:18.899 --> 00:12:19.860 And if you think of  
NOTE Confidence: 0.9989904

00:12:19.860 --> 00:12:20.600 this mechanistically,  
NOTE Confidence: 0.98372984

00:12:21.384 --> 00:12:23.065 it's not about avoiding things.  
NOTE Confidence: 0.98372984

00:12:23.065 --> 00:12:24.425 It's about bringing awareness to  
NOTE Confidence: 0.98372984

00:12:24.425 --> 00:12:25.704 it. It's not about, you  
NOTE Confidence: 0.98372984

00:12:25.704 --> 00:12:27.865 know, substituting behaviors. The way  
NOTE Confidence: 0.98372984

00:12:27.865 --> 00:12:29.545 that it's often described is  
NOTE Confidence: 0.98372984

00:12:29.545 --> 00:12:30.985 bringing this wedge of awareness  
NOTE Confidence: 0.98372984

00:12:30.985 --> 00:12:32.285 in. So instead of habitually  
NOTE Confidence: 0.98372984

00:12:32.505 --> 00:12:34.264 reacting to something, we can  
NOTE Confidence: 0.98372984

00:12:34.264 --> 00:12:34.764 respond  
NOTE Confidence: 0.9997931

00:12:35.144 --> 00:12:35.964 with awareness.  
NOTE Confidence: 0.98243695

00:12:36.380 --> 00:12:37.179 For example, I had a  
NOTE Confidence: 0.98243695

00:12:37.179 --> 00:12:39.019 patient who'd been smoking forty

NOTE Confidence: 0.98243695  
00:12:39.019 --> 00:12:39.519 years,  
NOTE Confidence: 0.996668  
00:12:40.140 --> 00:12:41.740 and we calculated the number  
NOTE Confidence: 0.996668  
00:12:41.740 --> 00:12:43.040 of times he had reinforced  
NOTE Confidence: 0.93596715  
00:12:43.500 --> 00:12:45.500 his smoking habits. For you  
NOTE Confidence: 0.93596715  
00:12:45.500 --> 00:12:47.179 mass savants out there, forty  
NOTE Confidence: 0.93596715  
00:12:47.179 --> 00:12:48.779 years times roughly three sixty  
NOTE Confidence: 0.93596715  
00:12:48.779 --> 00:12:49.580 five days a year times  
NOTE Confidence: 0.93596715  
00:12:49.580 --> 00:12:50.779 twenty cigarettes is about two  
NOTE Confidence: 0.93596715  
00:12:50.779 --> 00:12:52.000 hundred and ninety three thousand.  
NOTE Confidence: 0.9517963  
00:12:52.725 --> 00:12:53.605 And so you could think,  
NOTE Confidence: 0.9517963  
00:12:53.605 --> 00:12:54.725 well, let me just, you  
NOTE Confidence: 0.9517963  
00:12:54.725 --> 00:12:56.085 know, gird my loins and  
NOTE Confidence: 0.9517963  
00:12:56.085 --> 00:12:56.985 use my willpower.  
NOTE Confidence: 0.95807666  
00:12:57.525 --> 00:12:58.485 And then our brain's like,  
NOTE Confidence: 0.95807666  
00:12:58.485 --> 00:12:59.445 dude, I've got this. Two  
NOTE Confidence: 0.95807666

00:12:59.445 --> 00:13:00.645 hundred and ninety three thousand

NOTE Confidence: 0.95807666

00:13:00.645 --> 00:13:01.925 times, bring it on. Right?

NOTE Confidence: 0.95807666

00:13:01.925 --> 00:13:02.804 And so this is where

NOTE Confidence: 0.95807666

00:13:02.804 --> 00:13:03.845 I'd seen over and over

NOTE Confidence: 0.95807666

00:13:03.845 --> 00:13:05.365 and over so many patients

NOTE Confidence: 0.95807666

00:13:05.365 --> 00:13:06.985 failing from trying to just

NOTE Confidence: 0.95807666

00:13:07.240 --> 00:13:08.860 force themselves to quit smoking.

NOTE Confidence: 0.9446682

00:13:09.320 --> 00:13:10.600 So instead, we started asking

NOTE Confidence: 0.9446682

00:13:10.760 --> 00:13:11.640 I asked my patient, well,

NOTE Confidence: 0.9446682

00:13:11.640 --> 00:13:12.840 let's let's see how much

NOTE Confidence: 0.9446682

00:13:12.840 --> 00:13:13.580 we understand,

NOTE Confidence: 0.94755954

00:13:13.960 --> 00:13:15.480 you you understand how your

NOTE Confidence: 0.94755954

00:13:15.480 --> 00:13:17.000 brain works and how maybe

NOTE Confidence: 0.94755954

00:13:17.000 --> 00:13:18.460 we could even leverage that.

NOTE Confidence: 0.94755954

00:13:18.760 --> 00:13:20.280 And so here's here's this

NOTE Confidence: 0.94755954

00:13:20.280 --> 00:13:21.559 paradox. You know, how is

NOTE Confidence: 0.94755954  
00:13:21.559 --> 00:13:22.700 just paying attention  
NOTE Confidence: 0.9942667  
00:13:23.214 --> 00:13:24.815 gonna help somebody change their  
NOTE Confidence: 0.9942667  
00:13:24.815 --> 00:13:25.315 behavior?  
NOTE Confidence: 0.98035413  
00:13:27.054 --> 00:13:28.274 We we posited  
NOTE Confidence: 0.9744448  
00:13:28.575 --> 00:13:29.475 a while ago  
NOTE Confidence: 0.99330574  
00:13:29.855 --> 00:13:30.675 that awareness  
NOTE Confidence: 0.96395737  
00:13:31.054 --> 00:13:32.675 may be a critical ingredient  
NOTE Confidence: 0.96395737  
00:13:32.735 --> 00:13:34.495 in behavior change. We weren't  
NOTE Confidence: 0.96395737  
00:13:34.495 --> 00:13:35.695 exactly sure why at the  
NOTE Confidence: 0.96395737  
00:13:35.695 --> 00:13:36.735 time and then went on  
NOTE Confidence: 0.96395737  
00:13:36.735 --> 00:13:37.695 to try to explore some  
NOTE Confidence: 0.96395737  
00:13:37.695 --> 00:13:38.980 of the mechanisms of how  
NOTE Confidence: 0.96395737  
00:13:38.980 --> 00:13:40.300 it was helping. Here's a  
NOTE Confidence: 0.96395737  
00:13:40.340 --> 00:13:41.780 here's an example from one  
NOTE Confidence: 0.96395737  
00:13:41.780 --> 00:13:42.840 of our early studies,  
NOTE Confidence: 0.98045576

00:13:43.220 --> 00:13:44.980 where somebody reported we were

NOTE Confidence: 0.98045576

00:13:44.980 --> 00:13:46.100 having them pay attention as

NOTE Confidence: 0.98045576

00:13:46.100 --> 00:13:47.700 they smoked. This person said,

NOTE Confidence: 0.98045576

00:13:47.700 --> 00:13:50.020 mindful smoking smells like stinky

NOTE Confidence: 0.98045576

00:13:50.020 --> 00:13:51.559 cheese and tastes like chemicals.

NOTE Confidence: 0.98045576

00:13:51.620 --> 00:13:52.095 Yuck.

NOTE Confidence: 0.99379075

00:13:52.574 --> 00:13:53.554 This was a big

NOTE Confidence: 0.95894647

00:13:53.934 --> 00:13:55.134 not only for this person,

NOTE Confidence: 0.95894647

00:13:55.134 --> 00:13:55.934 but for me because this

NOTE Confidence: 0.95894647

00:13:55.934 --> 00:13:57.774 was starting to articulate what

NOTE Confidence: 0.95894647

00:13:57.774 --> 00:13:59.134 might actually be happening, and

NOTE Confidence: 0.95894647

00:13:59.134 --> 00:14:00.334 we could start to test

NOTE Confidence: 0.95894647

00:14:00.334 --> 00:14:01.154 that mechanistically.

NOTE Confidence: 0.99894977

00:14:01.535 --> 00:14:02.175 So if you look at

NOTE Confidence: 0.99894977

00:14:02.175 --> 00:14:03.694 this from a reinforcement learning

NOTE Confidence: 0.99894977

00:14:03.694 --> 00:14:04.194 standpoint,

NOTE Confidence: 0.96514064

00:14:04.735 --> 00:14:05.934 typically, you know, it's stress

NOTE Confidence: 0.96514064

00:14:05.934 --> 00:14:07.054 that will trigger somebody's smoke

NOTE Confidence: 0.96514064

00:14:07.054 --> 00:14:08.550 or withdrawal or something like

NOTE Confidence: 0.96514064

00:14:08.550 --> 00:14:10.230 that. So something unpleasant triggers

NOTE Confidence: 0.96514064

00:14:10.230 --> 00:14:11.270 us to do the behavior,

NOTE Confidence: 0.96514064

00:14:11.270 --> 00:14:12.550 such as smoking. But if

NOTE Confidence: 0.96514064

00:14:12.550 --> 00:14:14.230 we pay attention to how

NOTE Confidence: 0.96514064

00:14:14.230 --> 00:14:16.250 rewarding it is, maybe that

NOTE Confidence: 0.96514064

00:14:16.309 --> 00:14:17.990 helps to change the process.

NOTE Confidence: 0.96514064

00:14:17.990 --> 00:14:19.190 And we'll get into that

NOTE Confidence: 0.96514064

00:14:19.190 --> 00:14:20.070 in a little bit, but

NOTE Confidence: 0.96514064

00:14:20.070 --> 00:14:21.590 I just wanted I wanna

NOTE Confidence: 0.96514064

00:14:21.590 --> 00:14:23.265 see that, with a with

NOTE Confidence: 0.96514064

00:14:23.265 --> 00:14:24.464 a a question of, like,

NOTE Confidence: 0.96514064

00:14:24.464 --> 00:14:26.085 how does this actually help?

NOTE Confidence: 0.96514064

00:14:26.145 --> 00:14:27.985 Hint, this is called reward  
NOTE Confidence: 0.96514064

00:14:27.985 --> 00:14:30.005 based learning or reinforcement learning.  
NOTE Confidence: 0.97066146

00:14:31.185 --> 00:14:32.065 So not to,  
NOTE Confidence: 0.9362622

00:14:32.705 --> 00:14:33.745 I think Yogi Berra put  
NOTE Confidence: 0.9362622

00:14:33.745 --> 00:14:34.464 it nicely. He said you  
NOTE Confidence: 0.9362622

00:14:34.464 --> 00:14:35.505 can deserve a lot just  
NOTE Confidence: 0.9362622

00:14:35.505 --> 00:14:37.210 by watching. So it was  
NOTE Confidence: 0.9362622

00:14:37.210 --> 00:14:38.410 actually my first,  
NOTE Confidence: 0.98284626

00:14:38.970 --> 00:14:41.070 first real randomized controlled trial,  
NOTE Confidence: 0.99126714

00:14:41.930 --> 00:14:43.630 that I did as my  
NOTE Confidence: 0.99126714

00:14:43.770 --> 00:14:45.290 first first study here at  
NOTE Confidence: 0.99126714

00:14:45.290 --> 00:14:45.790 Yale.  
NOTE Confidence: 0.96851194

00:14:46.890 --> 00:14:48.170 We did a randomized controlled  
NOTE Confidence: 0.96851194

00:14:48.170 --> 00:14:49.470 trial just to compare mindfulness  
NOTE Confidence: 0.96851194

00:14:49.529 --> 00:14:50.970 training to the American Lung  
NOTE Confidence: 0.96851194

00:14:50.970 --> 00:14:52.755 Association's freedom from smoking based

NOTE Confidence: 0.96851194  
00:14:52.755 --> 00:14:54.275 on cognitive therapy. And we  
NOTE Confidence: 0.96851194  
00:14:54.275 --> 00:14:55.155 did all all the right  
NOTE Confidence: 0.96851194  
00:14:55.155 --> 00:14:56.435 things because I'd gotten good  
NOTE Confidence: 0.96851194  
00:14:56.435 --> 00:14:57.635 mentorship on how to do  
NOTE Confidence: 0.96851194  
00:14:57.635 --> 00:14:58.834 this. I'd you know, this  
NOTE Confidence: 0.96851194  
00:14:58.834 --> 00:14:59.955 is my first foray into  
NOTE Confidence: 0.96851194  
00:14:59.955 --> 00:15:02.035 smoking cessation work. And we  
NOTE Confidence: 0.96851194  
00:15:02.035 --> 00:15:03.655 had actually got, seventeen,  
NOTE Confidence: 0.96984357  
00:15:04.195 --> 00:15:05.395 seventeen weeks. That was what  
NOTE Confidence: 0.96984357  
00:15:05.395 --> 00:15:06.435 we were funded out to  
NOTE Confidence: 0.96984357  
00:15:06.435 --> 00:15:07.940 do. So gold standard's, like,  
NOTE Confidence: 0.96984357  
00:15:07.940 --> 00:15:09.140 six months or twelve months.  
NOTE Confidence: 0.96984357  
00:15:09.140 --> 00:15:09.940 But we looked, you know,  
NOTE Confidence: 0.96984357  
00:15:09.940 --> 00:15:10.980 about four months out, and  
NOTE Confidence: 0.96984357  
00:15:10.980 --> 00:15:12.020 we actually got five times  
NOTE Confidence: 0.96984357

00:15:12.020 --> 00:15:12.820 the quit rates of a  
NOTE Confidence: 0.96984357

00:15:12.820 --> 00:15:13.960 gold standard treatment.  
NOTE Confidence: 0.9849733

00:15:14.420 --> 00:15:15.460 So that was interesting. It  
NOTE Confidence: 0.9849733

00:15:15.460 --> 00:15:16.900 was a relatively small trial.  
NOTE Confidence: 0.9849733

00:15:16.900 --> 00:15:18.180 You know, lots of caveats  
NOTE Confidence: 0.9849733

00:15:18.180 --> 00:15:18.980 here, but it was it  
NOTE Confidence: 0.9849733

00:15:18.980 --> 00:15:20.100 was enough of a signal  
NOTE Confidence: 0.9849733

00:15:20.100 --> 00:15:21.620 to start asking, well, what's  
NOTE Confidence: 0.9849733

00:15:21.620 --> 00:15:22.600 going on here?  
NOTE Confidence: 0.97609013

00:15:22.955 --> 00:15:24.475 And so we have this  
NOTE Confidence: 0.97609013

00:15:24.475 --> 00:15:26.075 hypothesis that it would actually  
NOTE Confidence: 0.97609013

00:15:26.075 --> 00:15:27.215 work by decoupling  
NOTE Confidence: 0.9775849

00:15:27.675 --> 00:15:29.035 the urge to smoke with  
NOTE Confidence: 0.9775849

00:15:29.035 --> 00:15:30.475 the behavior of smoking itself.  
NOTE Confidence: 0.9775849

00:15:30.475 --> 00:15:31.595 And we could test this  
NOTE Confidence: 0.9775849

00:15:31.595 --> 00:15:32.095 mechanistically,

NOTE Confidence: 0.9684857

00:15:33.515 --> 00:15:34.955 where, you know, at baseline,

NOTE Confidence: 0.9684857

00:15:34.955 --> 00:15:35.995 we saw this really strong

NOTE Confidence: 0.9684857

00:15:35.995 --> 00:15:37.350 correlation between the urge to

NOTE Confidence: 0.9684857

00:15:37.350 --> 00:15:38.390 smoke and smoking makes a

NOTE Confidence: 0.9684857

00:15:38.390 --> 00:15:39.510 lot of sense. But it

NOTE Confidence: 0.9684857

00:15:39.590 --> 00:15:40.730 by the end of treatment,

NOTE Confidence: 0.9684857

00:15:40.950 --> 00:15:42.390 this is in the mindfulness

NOTE Confidence: 0.9684857

00:15:42.390 --> 00:15:43.830 training group, we saw a,

NOTE Confidence: 0.9684857

00:15:44.070 --> 00:15:45.830 complete dissociation of that correlation.

NOTE Confidence: 0.9684857

00:15:45.830 --> 00:15:46.710 And when we when we

NOTE Confidence: 0.9684857

00:15:46.710 --> 00:15:47.450 did the moderation

NOTE Confidence: 0.9664807

00:15:48.310 --> 00:15:50.265 analyses, we found that the

NOTE Confidence: 0.9664807

00:15:50.425 --> 00:15:52.025 the primary driver here was

NOTE Confidence: 0.9664807

00:15:52.025 --> 00:15:53.625 not about number of cigarettes

NOTE Confidence: 0.9664807

00:15:53.625 --> 00:15:54.585 that people are smoking or

NOTE Confidence: 0.9664807

00:15:54.585 --> 00:15:55.945 they're craving, but it was  
NOTE Confidence: 0.9664807

00:15:55.945 --> 00:15:58.265 really about these mindfulness practices  
NOTE Confidence: 0.9664807

00:15:58.265 --> 00:15:59.065 that people are doing. So  
NOTE Confidence: 0.9664807

00:15:59.065 --> 00:15:59.945 this this,  
NOTE Confidence: 0.98898184

00:16:00.345 --> 00:16:01.545 being able to work with  
NOTE Confidence: 0.98898184

00:16:01.545 --> 00:16:03.225 the urge, when it came  
NOTE Confidence: 0.98898184

00:16:03.225 --> 00:16:03.725 up.  
NOTE Confidence: 0.9192017

00:16:04.440 --> 00:16:05.660 Going back to the  
NOTE Confidence: 0.97244024

00:16:06.440 --> 00:16:07.100 the mechanism,  
NOTE Confidence: 0.9640391

00:16:07.720 --> 00:16:09.320 the idea here seems to  
NOTE Confidence: 0.9640391

00:16:09.320 --> 00:16:10.680 be supporting that this wedge  
NOTE Confidence: 0.9640391

00:16:10.680 --> 00:16:12.200 of awareness is helping people  
NOTE Confidence: 0.9640391

00:16:12.200 --> 00:16:13.880 have that urge but not  
NOTE Confidence: 0.9640391

00:16:13.880 --> 00:16:14.760 act on it and maybe  
NOTE Confidence: 0.9640391

00:16:14.760 --> 00:16:15.960 starting to break this loop  
NOTE Confidence: 0.9640391

00:16:15.960 --> 00:16:16.755 at its core.

NOTE Confidence: 0.98656356

00:16:17.315 --> 00:16:18.195 So at the time, I

NOTE Confidence: 0.98656356

00:16:18.195 --> 00:16:19.255 was working at the VA,

NOTE Confidence: 0.9132446

00:16:19.635 --> 00:16:21.475 in West Haven and, you

NOTE Confidence: 0.9132446

00:16:21.475 --> 00:16:22.935 know, look out my window,

NOTE Confidence: 0.94234276

00:16:23.475 --> 00:16:24.835 see all my patients smoking

NOTE Confidence: 0.94234276

00:16:24.835 --> 00:16:25.715 in the parking lot because

NOTE Confidence: 0.94234276

00:16:25.715 --> 00:16:26.935 it's a smoke free campus.

NOTE Confidence: 0.9079536

00:16:27.395 --> 00:16:29.315 And so actually building on

NOTE Confidence: 0.9079536

00:16:29.315 --> 00:16:31.075 inspiration from Cathy Carroll, who

NOTE Confidence: 0.9079536

00:16:31.075 --> 00:16:33.100 was starting to develop CBT

NOTE Confidence: 0.9079536

00:16:33.100 --> 00:16:34.480 for CBT at the time.

NOTE Confidence: 0.96338546

00:16:34.940 --> 00:16:36.780 I had it was actually

NOTE Confidence: 0.96338546

00:16:36.780 --> 00:16:37.500 with a,

NOTE Confidence: 0.9443404

00:16:38.140 --> 00:16:39.500 a young entrepreneur that had

NOTE Confidence: 0.9443404

00:16:39.500 --> 00:16:40.380 just come out of this

NOTE Confidence: 0.9443404

00:16:40.380 --> 00:16:41.820 Yale School of Management, who  
NOTE Confidence: 0.9443404

00:16:41.820 --> 00:16:43.600 was actually a documentary filmmaker.  
NOTE Confidence: 0.9608792

00:16:44.220 --> 00:16:46.785 We'd had these, these positive  
NOTE Confidence: 0.9608792

00:16:46.785 --> 00:16:48.305 results in person with mindfulness  
NOTE Confidence: 0.9608792

00:16:48.305 --> 00:16:49.105 training. We said, well, can  
NOTE Confidence: 0.9608792

00:16:49.105 --> 00:16:50.625 we digitize this? If people  
NOTE Confidence: 0.9608792

00:16:50.785 --> 00:16:51.505 you know, if they've got  
NOTE Confidence: 0.9608792

00:16:51.505 --> 00:16:52.545 their phone in one hand  
NOTE Confidence: 0.9608792

00:16:52.545 --> 00:16:53.845 and a cigarette in another,  
NOTE Confidence: 0.98722863

00:16:54.145 --> 00:16:55.185 let's you know, instead of  
NOTE Confidence: 0.98722863

00:16:55.185 --> 00:16:56.705 this being their social media,  
NOTE Confidence: 0.98722863

00:16:56.705 --> 00:16:58.410 their news news feed, let's  
NOTE Confidence: 0.98722863

00:16:58.490 --> 00:17:00.009 let's actually teach them stuff.  
NOTE Confidence: 0.98722863

00:17:00.009 --> 00:17:01.050 So we started playing with  
NOTE Confidence: 0.98722863

00:17:01.050 --> 00:17:02.170 this idea. This is back  
NOTE Confidence: 0.98722863

00:17:02.170 --> 00:17:03.129 in two thousand twelve. It

NOTE Confidence: 0.98722863

00:17:03.129 --> 00:17:03.629 was

NOTE Confidence: 0.9485553

00:17:04.730 --> 00:17:05.609 some of you might not

NOTE Confidence: 0.9485553

00:17:05.609 --> 00:17:06.809 have even been born back

NOTE Confidence: 0.9485553

00:17:06.809 --> 00:17:08.250 then. But anyway, way back

NOTE Confidence: 0.9485553

00:17:08.250 --> 00:17:09.470 in two thousand twelve,

NOTE Confidence: 0.96066934

00:17:09.770 --> 00:17:10.890 there were the Android phone

NOTE Confidence: 0.96066934

00:17:10.890 --> 00:17:12.169 actually looked like a huge

NOTE Confidence: 0.96066934

00:17:12.169 --> 00:17:14.305 clunky Texas instrument calculator for

NOTE Confidence: 0.96066934

00:17:14.305 --> 00:17:15.345 those of you that remember.

NOTE Confidence: 0.96066934

00:17:15.345 --> 00:17:16.705 So this is early days

NOTE Confidence: 0.96066934

00:17:16.705 --> 00:17:18.305 for smartphones. Now we we,

NOTE Confidence: 0.96066934

00:17:18.305 --> 00:17:19.345 you know, we walk out

NOTE Confidence: 0.96066934

00:17:19.345 --> 00:17:20.145 of our bedroom in the

NOTE Confidence: 0.96066934

00:17:20.145 --> 00:17:21.585 morning and our smoke smartphone's

NOTE Confidence: 0.96066934

00:17:21.585 --> 00:17:22.545 gone and we panic because

NOTE Confidence: 0.96066934

00:17:22.545 --> 00:17:23.185 we were like, oh my  
NOTE Confidence: 0.96066934

00:17:23.185 --> 00:17:24.385 god. My light there's something  
NOTE Confidence: 0.96066934

00:17:24.385 --> 00:17:25.585 wrong with you know, there's  
NOTE Confidence: 0.96066934

00:17:25.585 --> 00:17:27.150 something missing in me. So  
NOTE Confidence: 0.96066934

00:17:27.230 --> 00:17:28.670 it's very different now, especially  
NOTE Confidence: 0.96066934

00:17:28.670 --> 00:17:30.190 for digital natives. But back  
NOTE Confidence: 0.96066934

00:17:30.190 --> 00:17:31.310 then, this was this was  
NOTE Confidence: 0.96066934

00:17:31.310 --> 00:17:32.590 very different territory. So we  
NOTE Confidence: 0.96066934

00:17:32.590 --> 00:17:34.350 started exploring, can we actually  
NOTE Confidence: 0.96066934

00:17:34.350 --> 00:17:36.130 digitize these things and deliver  
NOTE Confidence: 0.96066934

00:17:36.190 --> 00:17:37.330 evidence based trainings,  
NOTE Confidence: 0.96935886

00:17:38.190 --> 00:17:39.630 through an app? And, you  
NOTE Confidence: 0.96935886

00:17:39.630 --> 00:17:40.734 know, it seems like, you  
NOTE Confidence: 0.96935886

00:17:40.734 --> 00:17:42.494 know, that's pretty straightforward. But  
NOTE Confidence: 0.96935886

00:17:42.494 --> 00:17:43.294 back then, it was it  
NOTE Confidence: 0.96935886

00:17:43.294 --> 00:17:44.894 was uncharted territory. So we

NOTE Confidence: 0.96935886  
00:17:44.894 --> 00:17:45.875 started with smoking,  
NOTE Confidence: 0.9877142  
00:17:46.255 --> 00:17:47.794 then even explored eating.  
NOTE Confidence: 0.986424  
00:17:48.095 --> 00:17:48.975 I I won't go into  
NOTE Confidence: 0.986424  
00:17:48.975 --> 00:17:49.855 a lot of the details  
NOTE Confidence: 0.986424  
00:17:49.855 --> 00:17:50.994 with the eating program,  
NOTE Confidence: 0.9690468  
00:17:51.455 --> 00:17:52.335 but I I'd like to  
NOTE Confidence: 0.9690468  
00:17:52.494 --> 00:17:53.855 I'm very proud that the,  
NOTE Confidence: 0.9690468  
00:17:54.255 --> 00:17:55.375 the eating program is now  
NOTE Confidence: 0.9690468  
00:17:55.375 --> 00:17:57.780 the first, CDC recognized diabetes  
NOTE Confidence: 0.9690468  
00:17:57.780 --> 00:17:59.299 prevention program that's based in  
NOTE Confidence: 0.9690468  
00:17:59.299 --> 00:18:00.980 mindfulness, that's not based in  
NOTE Confidence: 0.9690468  
00:18:00.980 --> 00:18:01.880 cognitive therapy.  
NOTE Confidence: 0.9456785  
00:18:02.740 --> 00:18:04.820 And then even exploring anxiety  
NOTE Confidence: 0.9456785  
00:18:04.820 --> 00:18:05.640 as a habit.  
NOTE Confidence: 0.94902956  
00:18:06.100 --> 00:18:07.640 And for for you residents,  
NOTE Confidence: 0.94902956

00:18:07.700 --> 00:18:08.820 I must have slept through  
NOTE Confidence: 0.94902956

00:18:08.820 --> 00:18:10.179 that class where they talk  
NOTE Confidence: 0.94902956

00:18:10.179 --> 00:18:11.914 about Borca Beck and and  
NOTE Confidence: 0.94902956

00:18:11.914 --> 00:18:12.955 anxiety being a habit. If  
NOTE Confidence: 0.94902956

00:18:12.955 --> 00:18:14.075 you slept through that class  
NOTE Confidence: 0.94902956

00:18:14.075 --> 00:18:15.674 too, here's the one liner  
NOTE Confidence: 0.94902956

00:18:15.674 --> 00:18:16.655 that you need to know,  
NOTE Confidence: 0.9405753

00:18:17.355 --> 00:18:18.395 because I didn't know this  
NOTE Confidence: 0.9405753

00:18:18.395 --> 00:18:20.155 back then, that Borkovec, back  
NOTE Confidence: 0.9405753

00:18:20.155 --> 00:18:21.115 in the nineteen eighties, back  
NOTE Confidence: 0.9405753

00:18:21.115 --> 00:18:22.554 when Prozac was introduced, you  
NOTE Confidence: 0.9405753

00:18:22.554 --> 00:18:23.615 know, and and overshadowed  
NOTE Confidence: 0.9973387

00:18:24.155 --> 00:18:25.615 this this really seminal  
NOTE Confidence: 0.9718487

00:18:26.619 --> 00:18:28.059 idea, in my opinion. He  
NOTE Confidence: 0.9718487

00:18:28.059 --> 00:18:28.940 was saying, you know what?  
NOTE Confidence: 0.9718487

00:18:28.940 --> 00:18:30.619 Anxiety could be driven, through

NOTE Confidence: 0.9718487

00:18:30.619 --> 00:18:32.300 negative reinforcement like a habit.

NOTE Confidence: 0.9718487

00:18:32.300 --> 00:18:33.100 And he was saying that

NOTE Confidence: 0.9718487

00:18:33.100 --> 00:18:34.960 worry thinking isn't is reinforcing

NOTE Confidence: 0.9718487

00:18:35.100 --> 00:18:35.980 enough where it makes us

NOTE Confidence: 0.9718487

00:18:35.980 --> 00:18:36.859 feel like we're in control

NOTE Confidence: 0.9718487

00:18:36.859 --> 00:18:37.740 or avoid things or at

NOTE Confidence: 0.9718487

00:18:37.740 --> 00:18:38.800 least doing something.

NOTE Confidence: 0.9628614

00:18:39.175 --> 00:18:40.455 I recently heard from a

NOTE Confidence: 0.9628614

00:18:40.455 --> 00:18:41.734 patient the, you said that,

NOTE Confidence: 0.9628614

00:18:41.734 --> 00:18:43.015 you know, my grandmother used

NOTE Confidence: 0.9628614

00:18:43.015 --> 00:18:44.455 to say that that worrying

NOTE Confidence: 0.9628614

00:18:44.455 --> 00:18:45.255 is like being in a

NOTE Confidence: 0.9628614

00:18:45.255 --> 00:18:46.215 rocking chair. It gives you

NOTE Confidence: 0.9628614

00:18:46.215 --> 00:18:47.095 something to do, but you're

NOTE Confidence: 0.9628614

00:18:47.095 --> 00:18:47.994 not going anywhere.

NOTE Confidence: 0.987757

00:18:48.295 --> 00:18:49.335 And so I think that  
NOTE Confidence: 0.987757

00:18:49.335 --> 00:18:50.775 really touches on this. But  
NOTE Confidence: 0.987757

00:18:50.775 --> 00:18:52.615 the problem also is you're  
NOTE Confidence: 0.987757

00:18:52.615 --> 00:18:53.895 not going anywhere, but you're  
NOTE Confidence: 0.987757

00:18:53.895 --> 00:18:54.395 actually  
NOTE Confidence: 0.9391382

00:18:54.760 --> 00:18:56.119 feeding more anxiety. Because when  
NOTE Confidence: 0.9391382

00:18:56.119 --> 00:18:57.480 we worry, it tends to  
NOTE Confidence: 0.9391382

00:18:57.480 --> 00:18:58.760 feed forward and drive these  
NOTE Confidence: 0.9391382

00:18:58.760 --> 00:18:59.980 anxiety habit loops.  
NOTE Confidence: 0.9784762

00:19:00.440 --> 00:19:02.200 So we started developing these  
NOTE Confidence: 0.9784762

00:19:02.200 --> 00:19:03.720 digital therapeutics just to see  
NOTE Confidence: 0.9784762

00:19:03.720 --> 00:19:05.240 if they would work, where  
NOTE Confidence: 0.9784762

00:19:05.240 --> 00:19:06.280 we could cut the training  
NOTE Confidence: 0.9784762

00:19:06.280 --> 00:19:07.580 into bite sized pieces,  
NOTE Confidence: 0.9634203

00:19:08.815 --> 00:19:10.175 help people understand how their  
NOTE Confidence: 0.9634203

00:19:10.175 --> 00:19:10.994 minds work,

NOTE Confidence: 0.97366935

00:19:11.455 --> 00:19:12.655 give them, you know, things

NOTE Confidence: 0.97366935

00:19:12.655 --> 00:19:14.175 that are accessible instead of

NOTE Confidence: 0.97366935

00:19:14.175 --> 00:19:15.295 patients having to, you know,

NOTE Confidence: 0.97366935

00:19:15.295 --> 00:19:16.175 take a bus, come to

NOTE Confidence: 0.97366935

00:19:16.175 --> 00:19:17.935 my clinic, spend fifteen minutes

NOTE Confidence: 0.97366935

00:19:17.935 --> 00:19:18.655 with me, and then take

NOTE Confidence: 0.97366935

00:19:18.655 --> 00:19:20.015 a bus home, get childcare,

NOTE Confidence: 0.97366935

00:19:20.015 --> 00:19:20.815 all those things. We could

NOTE Confidence: 0.97366935

00:19:20.815 --> 00:19:21.695 just see if we can

NOTE Confidence: 0.97366935

00:19:21.695 --> 00:19:23.315 deliver it through their phone,

NOTE Confidence: 0.92185783

00:19:24.809 --> 00:19:25.770 drive some key points, come

NOTE Confidence: 0.92185783

00:19:25.770 --> 00:19:26.970 through animations and in the

NOTE Confidence: 0.92185783

00:19:26.970 --> 00:19:28.250 moment exercises. But as a

NOTE Confidence: 0.92185783

00:19:28.250 --> 00:19:28.750 researcher,

NOTE Confidence: 0.9649575

00:19:29.210 --> 00:19:30.890 really wanted to see how

NOTE Confidence: 0.9649575

00:19:30.890 --> 00:19:31.850 we could study this stuff  
NOTE Confidence: 0.9649575

00:19:31.850 --> 00:19:32.730 to see if it actually  
NOTE Confidence: 0.9649575

00:19:32.730 --> 00:19:33.770 worked, because we had we  
NOTE Confidence: 0.9649575

00:19:33.770 --> 00:19:34.890 had no idea if and  
NOTE Confidence: 0.9649575

00:19:34.890 --> 00:19:36.184 how it would work. We  
NOTE Confidence: 0.9649575

00:19:36.184 --> 00:19:37.545 could also pair this with  
NOTE Confidence: 0.9649575

00:19:37.545 --> 00:19:38.365 online communities,  
NOTE Confidence: 0.996772

00:19:38.984 --> 00:19:40.505 to have people support each  
NOTE Confidence: 0.996772

00:19:40.505 --> 00:19:41.165 other, etcetera.  
NOTE Confidence: 0.91255957

00:19:41.705 --> 00:19:42.265 Just to give you an  
NOTE Confidence: 0.91255957

00:19:42.265 --> 00:19:42.765 example,  
NOTE Confidence: 0.9327698

00:19:44.105 --> 00:19:45.465 of how how this might  
NOTE Confidence: 0.9327698

00:19:45.465 --> 00:19:45.965 work,  
NOTE Confidence: 0.95809454

00:19:46.585 --> 00:19:47.625 even with eating, I had  
NOTE Confidence: 0.95809454

00:19:47.625 --> 00:19:48.825 a patient with binge eating  
NOTE Confidence: 0.95809454

00:19:48.825 --> 00:19:49.325 disorder,

NOTE Confidence: 0.94937694

00:19:49.960 --> 00:19:51.400 who who was, she was

NOTE Confidence: 0.94937694

00:19:51.400 --> 00:19:52.760 about thirty years of age

NOTE Confidence: 0.94937694

00:19:52.760 --> 00:19:53.560 when she came to see

NOTE Confidence: 0.94937694

00:19:53.560 --> 00:19:54.060 me

NOTE Confidence: 0.9682713

00:19:54.360 --> 00:19:56.040 and had been binging on

NOTE Confidence: 0.9682713

00:19:56.040 --> 00:19:57.640 entire large pizzas twenty out

NOTE Confidence: 0.9682713

00:19:57.640 --> 00:19:58.600 of thirty days a month.

NOTE Confidence: 0.9682713

00:19:58.600 --> 00:19:59.640 And the way she described

NOTE Confidence: 0.9682713

00:19:59.640 --> 00:20:00.300 it was

NOTE Confidence: 0.9611578

00:20:01.000 --> 00:20:02.280 the details are actually not

NOTE Confidence: 0.9611578

00:20:02.280 --> 00:20:03.535 that important here, where her

NOTE Confidence: 0.9611578

00:20:03.535 --> 00:20:05.055 mom had been starting to

NOTE Confidence: 0.9611578

00:20:05.055 --> 00:20:06.255 emotionally abuse her when she

NOTE Confidence: 0.9611578

00:20:06.255 --> 00:20:06.994 was eight.

NOTE Confidence: 0.9989509

00:20:07.375 --> 00:20:08.255 And the way that she

NOTE Confidence: 0.9989509

00:20:08.255 --> 00:20:08.755 coped  
NOTE Confidence: 0.9770103

00:20:09.135 --> 00:20:10.895 was to eat, because that's  
NOTE Confidence: 0.9770103

00:20:10.895 --> 00:20:12.095 something that she had control  
NOTE Confidence: 0.9770103

00:20:12.095 --> 00:20:13.215 over. And so you can  
NOTE Confidence: 0.9770103

00:20:13.295 --> 00:20:14.095 you know, if we map  
NOTE Confidence: 0.9770103

00:20:14.095 --> 00:20:14.915 this out mechanistically,  
NOTE Confidence: 0.9983353

00:20:15.769 --> 00:20:17.389 the negative emotion that  
NOTE Confidence: 0.87955827

00:20:17.850 --> 00:20:18.809 that that started then, and  
NOTE Confidence: 0.87955827

00:20:18.809 --> 00:20:19.789 then she would  
NOTE Confidence: 0.9544783

00:20:20.090 --> 00:20:21.289 broaden this to, you know,  
NOTE Confidence: 0.9544783

00:20:21.289 --> 00:20:22.570 any negative emotion she would  
NOTE Confidence: 0.9544783

00:20:22.570 --> 00:20:23.850 eat, she would binge, and  
NOTE Confidence: 0.9544783

00:20:23.850 --> 00:20:24.570 it would give her some  
NOTE Confidence: 0.9544783

00:20:24.570 --> 00:20:26.029 temporary relief. And again,  
NOTE Confidence: 0.9803948

00:20:26.490 --> 00:20:28.009 just like my patients who  
NOTE Confidence: 0.9803948

00:20:28.009 --> 00:20:29.129 struggle with smoking or other

NOTE Confidence: 0.9803948

00:20:29.129 --> 00:20:30.330 addictive behaviors, she had no

NOTE Confidence: 0.9803948

00:20:30.330 --> 00:20:32.315 idea how her mind worked.

NOTE Confidence: 0.9803948

00:20:32.315 --> 00:20:33.935 So how do we actually,

NOTE Confidence: 0.9803948

00:20:34.234 --> 00:20:35.115 you know, how do we

NOTE Confidence: 0.9803948

00:20:35.115 --> 00:20:35.615 actually

NOTE Confidence: 0.9649119

00:20:36.234 --> 00:20:37.855 target this? So mechanistically,

NOTE Confidence: 0.9737368

00:20:38.555 --> 00:20:39.915 you know, building on what

NOTE Confidence: 0.9737368

00:20:39.915 --> 00:20:41.035 we'd done in our early

NOTE Confidence: 0.9737368

00:20:41.035 --> 00:20:41.935 work with smoking,

NOTE Confidence: 0.9240866

00:20:42.475 --> 00:20:43.595 this is in a study

NOTE Confidence: 0.9240866

00:20:43.595 --> 00:20:45.455 in collaboration with Ashley Mason.

NOTE Confidence: 0.9240866

00:20:45.515 --> 00:20:47.510 Ashley Mason actually, led this

NOTE Confidence: 0.9240866

00:20:47.510 --> 00:20:48.330 at at UCSF.

NOTE Confidence: 0.95804447

00:20:48.789 --> 00:20:49.750 She asked the question, well,

NOTE Confidence: 0.95804447

00:20:49.750 --> 00:20:51.350 can we target we use

NOTE Confidence: 0.95804447

00:20:51.350 --> 00:20:53.369 this, digital mindfulness training  
NOTE Confidence: 0.99914044

00:20:53.909 --> 00:20:55.369 to help people  
NOTE Confidence: 0.99865675

00:20:55.830 --> 00:20:56.330 decouple  
NOTE Confidence: 0.948425

00:20:56.789 --> 00:20:57.830 that urge to eat and  
NOTE Confidence: 0.948425

00:20:57.830 --> 00:20:58.330 eating,  
NOTE Confidence: 0.9715082

00:20:59.494 --> 00:21:01.015 from, you know, from just  
NOTE Confidence: 0.9715082

00:21:01.015 --> 00:21:02.455 habitually going through the behavior.  
NOTE Confidence: 0.9715082

00:21:02.455 --> 00:21:03.115 And, again,  
NOTE Confidence: 0.9665931

00:21:03.415 --> 00:21:04.775 caveat, this is a this  
NOTE Confidence: 0.9665931

00:21:04.775 --> 00:21:06.155 is a single arm mechanistic  
NOTE Confidence: 0.9665931

00:21:06.215 --> 00:21:07.734 study, where she was really  
NOTE Confidence: 0.9665931

00:21:07.734 --> 00:21:09.655 focused on looking to see  
NOTE Confidence: 0.9665931

00:21:09.655 --> 00:21:10.935 if you can decouple that  
NOTE Confidence: 0.9665931

00:21:10.935 --> 00:21:12.775 relationship, and she used experience  
NOTE Confidence: 0.9665931

00:21:12.775 --> 00:21:14.139 sampling to study  
NOTE Confidence: 0.966747

00:21:14.440 --> 00:21:15.080 this. So a lot of

NOTE Confidence: 0.966747

00:21:15.080 --> 00:21:16.759 caveats here, but she, in

NOTE Confidence: 0.966747

00:21:16.759 --> 00:21:18.039 fact, found a forty percent

NOTE Confidence: 0.966747

00:21:18.039 --> 00:21:19.659 reduction in craving related eating.

NOTE Confidence: 0.97824484

00:21:20.039 --> 00:21:20.779 And importantly,

NOTE Confidence: 0.97136694

00:21:21.480 --> 00:21:22.600 going back to this, you

NOTE Confidence: 0.97136694

00:21:22.600 --> 00:21:23.320 know, if you go back

NOTE Confidence: 0.97136694

00:21:23.320 --> 00:21:24.600 to the mechanism that, or,

NOTE Confidence: 0.97136694

00:21:24.600 --> 00:21:26.139 you know, that something unpleasant

NOTE Confidence: 0.97136694

00:21:26.200 --> 00:21:27.659 causes that urge to eat,

NOTE Confidence: 0.97136694

00:21:27.755 --> 00:21:28.635 she found a thirty five

NOTE Confidence: 0.97136694

00:21:28.635 --> 00:21:29.755 percent reduction in eating to

NOTE Confidence: 0.97136694

00:21:29.755 --> 00:21:31.035 cope with negative emotions. So

NOTE Confidence: 0.97136694

00:21:31.035 --> 00:21:32.555 not a hundred percent, but

NOTE Confidence: 0.97136694

00:21:32.555 --> 00:21:35.295 some signal there that, suggested,

NOTE Confidence: 0.97136694

00:21:35.435 --> 00:21:36.494 you know, that mechanistically,

NOTE Confidence: 0.99493235

00:21:36.955 --> 00:21:38.235 it could be, it could  
NOTE Confidence: 0.99493235

00:21:38.235 --> 00:21:39.900 be affecting that as well.  
NOTE Confidence: 0.9520023

00:21:40.540 --> 00:21:42.540 So, you know, smoking may  
NOTE Confidence: 0.9520023

00:21:42.540 --> 00:21:43.900 be a signal there. Eating  
NOTE Confidence: 0.9520023

00:21:43.900 --> 00:21:44.940 may be a signal there.  
NOTE Confidence: 0.9520023

00:21:44.940 --> 00:21:45.840 A lot of caveats,  
NOTE Confidence: 0.7974087

00:21:46.220 --> 00:21:47.600 with these studies, small  
NOTE Confidence: 0.9363514

00:21:47.900 --> 00:21:48.400 studies.  
NOTE Confidence: 0.9442552

00:21:48.859 --> 00:21:49.820 You know, this one, for  
NOTE Confidence: 0.9442552

00:21:49.820 --> 00:21:51.200 example, didn't have a comparison  
NOTE Confidence: 0.9442552

00:21:51.260 --> 00:21:52.700 group, but that gave us  
NOTE Confidence: 0.9442552

00:21:52.940 --> 00:21:54.060 I actually had a a  
NOTE Confidence: 0.9442552

00:21:54.060 --> 00:21:55.615 patient who was who was  
NOTE Confidence: 0.9442552

00:21:55.615 --> 00:21:56.914 using this this program  
NOTE Confidence: 0.9570981

00:21:57.215 --> 00:21:58.174 and saying, you know what?  
NOTE Confidence: 0.9570981

00:21:58.174 --> 00:21:59.135 As I map out these

NOTE Confidence: 0.9570981

00:21:59.135 --> 00:22:00.895 habit loops around eating, I

NOTE Confidence: 0.9570981

00:22:00.895 --> 00:22:02.595 realized that anxiety is driving

NOTE Confidence: 0.9570981

00:22:02.734 --> 00:22:04.575 my my eating behavior. So

NOTE Confidence: 0.9570981

00:22:04.575 --> 00:22:06.015 can you develop an a

NOTE Confidence: 0.9570981

00:22:06.015 --> 00:22:07.855 program for for anxiety? And

NOTE Confidence: 0.9570981

00:22:07.855 --> 00:22:08.940 I was thinking, I I

NOTE Confidence: 0.9570981

00:22:09.019 --> 00:22:10.539 I prescribe medications for anxiety.

NOTE Confidence: 0.9570981

00:22:10.539 --> 00:22:11.500 I hadn't really thought about

NOTE Confidence: 0.9570981

00:22:11.500 --> 00:22:13.019 that. But then I went

NOTE Confidence: 0.9570981

00:22:13.019 --> 00:22:13.740 back and looked at the

NOTE Confidence: 0.9570981

00:22:13.740 --> 00:22:15.340 literature, especially as I would,

NOTE Confidence: 0.9570981

00:22:15.340 --> 00:22:16.700 you know, have four out

NOTE Confidence: 0.9570981

00:22:16.700 --> 00:22:18.879 of patient, five patients struggle

NOTE Confidence: 0.9570981

00:22:19.100 --> 00:22:20.859 with, with the medications I

NOTE Confidence: 0.9570981

00:22:20.859 --> 00:22:22.415 was prescribing for them. I

NOTE Confidence: 0.9570981

00:22:22.415 --> 00:22:24.255 started I found Borkubeck's work  
NOTE Confidence: 0.9570981

00:22:24.255 --> 00:22:25.535 and said, Hey, could we  
NOTE Confidence: 0.9570981

00:22:25.535 --> 00:22:27.055 actually target anxiety like I  
NOTE Confidence: 0.9570981

00:22:27.055 --> 00:22:27.955 have it as well?  
NOTE Confidence: 0.98988134

00:22:28.415 --> 00:22:29.215 So we,  
NOTE Confidence: 0.99784154

00:22:30.575 --> 00:22:31.715 we did a study  
NOTE Confidence: 0.86496633

00:22:32.175 --> 00:22:32.675 starting,  
NOTE Confidence: 0.89403033

00:22:33.295 --> 00:22:34.575 I was like, What's the  
NOTE Confidence: 0.89403033

00:22:34.575 --> 00:22:36.494 most challenging population to work  
NOTE Confidence: 0.89403033

00:22:36.494 --> 00:22:37.700 with? It's like, who are  
NOTE Confidence: 0.89403033

00:22:37.859 --> 00:22:38.820 who who really don't take  
NOTE Confidence: 0.89403033

00:22:38.820 --> 00:22:40.260 care of themselves and, you  
NOTE Confidence: 0.89403033

00:22:40.260 --> 00:22:41.060 know, and this and that.  
NOTE Confidence: 0.89403033

00:22:41.060 --> 00:22:41.780 And this is long story  
NOTE Confidence: 0.89403033

00:22:41.780 --> 00:22:42.420 short, I was like, oh,  
NOTE Confidence: 0.89403033

00:22:42.420 --> 00:22:44.100 yeah. Physicians. We are not

NOTE Confidence: 0.89403033

00:22:44.100 --> 00:22:44.920 good patients.

NOTE Confidence: 0.97205114

00:22:45.540 --> 00:22:46.580 So we did our first

NOTE Confidence: 0.97205114

00:22:46.580 --> 00:22:48.040 study. This was just a,

NOTE Confidence: 0.976766

00:22:48.420 --> 00:22:50.040 you know, a signal finding

NOTE Confidence: 0.976766

00:22:50.115 --> 00:22:51.315 study to say, okay, can

NOTE Confidence: 0.976766

00:22:51.315 --> 00:22:52.994 we work with challenging populations

NOTE Confidence: 0.976766

00:22:52.994 --> 00:22:54.355 who are anxious to see

NOTE Confidence: 0.976766

00:22:54.355 --> 00:22:55.395 if there's a reduction in

NOTE Confidence: 0.976766

00:22:55.395 --> 00:22:55.895 anxiety

NOTE Confidence: 0.983341

00:22:56.275 --> 00:22:57.955 with this, with this anxiety

NOTE Confidence: 0.983341

00:22:57.955 --> 00:22:58.455 program?

NOTE Confidence: 0.9958113

00:22:58.835 --> 00:22:59.895 Long story short,

NOTE Confidence: 0.9756668

00:23:00.915 --> 00:23:02.210 the details are are in

NOTE Confidence: 0.9756668

00:23:02.210 --> 00:23:03.410 the published papers, but we

NOTE Confidence: 0.9756668

00:23:03.410 --> 00:23:04.530 actually got a fifty seven

NOTE Confidence: 0.9756668

00:23:04.530 --> 00:23:06.130 percent reduction in anxiety at  
NOTE Confidence: 0.9756668

00:23:06.130 --> 00:23:07.109 our primary endpoint  
NOTE Confidence: 0.96615225

00:23:07.650 --> 00:23:08.930 at at three months. And  
NOTE Confidence: 0.96615225

00:23:08.930 --> 00:23:09.730 so you can see most  
NOTE Confidence: 0.96615225

00:23:09.730 --> 00:23:10.869 of these folks started,  
NOTE Confidence: 0.9521334

00:23:11.330 --> 00:23:12.850 with GAD seven scores of  
NOTE Confidence: 0.9521334

00:23:12.850 --> 00:23:13.970 above ten, so they were  
NOTE Confidence: 0.9521334

00:23:13.970 --> 00:23:15.090 all within that, you know,  
NOTE Confidence: 0.9521334

00:23:15.090 --> 00:23:17.355 that presumptive diagnosis of generalized  
NOTE Confidence: 0.9521334

00:23:17.355 --> 00:23:18.795 anxiety disorder. And here, they  
NOTE Confidence: 0.9521334

00:23:18.795 --> 00:23:20.235 were getting close to remission,  
NOTE Confidence: 0.9521334

00:23:20.235 --> 00:23:21.375 which is below five.  
NOTE Confidence: 0.98314863

00:23:21.755 --> 00:23:22.955 So that was that was  
NOTE Confidence: 0.98314863

00:23:22.955 --> 00:23:24.155 an interesting signal, and that  
NOTE Confidence: 0.98314863

00:23:24.155 --> 00:23:24.975 gave us enough,  
NOTE Confidence: 0.9702303

00:23:25.995 --> 00:23:27.115 pilot data to go to

NOTE Confidence: 0.9702303

00:23:27.115 --> 00:23:28.495 the NIH and,

NOTE Confidence: 0.95156

00:23:28.859 --> 00:23:30.540 get funding for randomized controlled

NOTE Confidence: 0.95156

00:23:30.540 --> 00:23:32.059 trials. So here we started

NOTE Confidence: 0.95156

00:23:32.059 --> 00:23:33.340 doing randomized controlled trials with

NOTE Confidence: 0.95156

00:23:33.340 --> 00:23:35.020 people with generalized anxiety disorder.

NOTE Confidence: 0.95156

00:23:35.020 --> 00:23:36.220 And I won't bore you

NOTE Confidence: 0.95156

00:23:36.220 --> 00:23:37.040 with the details.

NOTE Confidence: 0.9843911

00:23:37.580 --> 00:23:38.700 Again, this was published a

NOTE Confidence: 0.9843911

00:23:38.700 --> 00:23:39.840 couple of years ago,

NOTE Confidence: 0.9595784

00:23:40.140 --> 00:23:41.340 but we just we did

NOTE Confidence: 0.9595784

00:23:41.340 --> 00:23:42.380 a real world study where

NOTE Confidence: 0.9595784

00:23:42.380 --> 00:23:43.695 we said, okay, let's take

NOTE Confidence: 0.9595784

00:23:43.774 --> 00:23:44.894 clinical care and then just

NOTE Confidence: 0.9595784

00:23:44.894 --> 00:23:45.615 add in you know, if

NOTE Confidence: 0.9595784

00:23:45.615 --> 00:23:47.215 you prescribe a medication, how

NOTE Confidence: 0.9595784

00:23:47.215 --> 00:23:48.914 about just prescribing an app?

NOTE Confidence: 0.97986835

00:23:49.215 --> 00:23:50.755 And so we had people,

NOTE Confidence: 0.97986835

00:23:50.975 --> 00:23:52.494 you know, randomized to one

NOTE Confidence: 0.97986835

00:23:52.494 --> 00:23:53.455 of these two conditions. And

NOTE Confidence: 0.97986835

00:23:53.455 --> 00:23:54.274 you can see

NOTE Confidence: 0.98994875

00:23:54.575 --> 00:23:54.815 the,

NOTE Confidence: 0.94879556

00:23:55.455 --> 00:23:57.389 in in green, the treatment

NOTE Confidence: 0.94879556

00:23:57.389 --> 00:23:58.909 as usual, which actually fourteen

NOTE Confidence: 0.94879556

00:23:58.909 --> 00:24:00.029 percent is right on par

NOTE Confidence: 0.94879556

00:24:00.029 --> 00:24:01.070 with the number needed to

NOTE Confidence: 0.94879556

00:24:01.070 --> 00:24:01.950 treat a five point two.

NOTE Confidence: 0.94879556

00:24:01.950 --> 00:24:03.149 About, you know, about one

NOTE Confidence: 0.94879556

00:24:03.149 --> 00:24:04.609 in five people were showing

NOTE Confidence: 0.81211376

00:24:04.990 --> 00:24:05.869 a a some, you know,

NOTE Confidence: 0.81211376

00:24:05.869 --> 00:24:07.789 significant reduction. It wasn't a

NOTE Confidence: 0.81211376

00:24:07.789 --> 00:24:08.289 a

NOTE Confidence: 0.96482396

00:24:08.595 --> 00:24:10.035 remission, but it was some

NOTE Confidence: 0.96482396

00:24:10.035 --> 00:24:11.475 reduction. Yet when you added

NOTE Confidence: 0.96482396

00:24:11.475 --> 00:24:13.174 in mindfulness training,

NOTE Confidence: 0.9662609

00:24:13.635 --> 00:24:15.234 we're getting sixty four percent

NOTE Confidence: 0.9662609

00:24:15.234 --> 00:24:16.515 remission, which was pretty interesting

NOTE Confidence: 0.9662609

00:24:16.515 --> 00:24:17.475 with the number needed to

NOTE Confidence: 0.9662609

00:24:17.475 --> 00:24:18.755 treat calculated at one point

NOTE Confidence: 0.9662609

00:24:18.755 --> 00:24:19.255 six.

NOTE Confidence: 0.9636084

00:24:20.115 --> 00:24:21.575 So we're seeing some signal

NOTE Confidence: 0.9636084

00:24:21.790 --> 00:24:22.910 there, and we wanted to

NOTE Confidence: 0.9636084

00:24:22.910 --> 00:24:24.830 understand mechanistically what was going

NOTE Confidence: 0.9636084

00:24:24.830 --> 00:24:25.330 on.

NOTE Confidence: 0.9265854

00:24:25.710 --> 00:24:27.250 So here we looked at,

NOTE Confidence: 0.9755083

00:24:27.710 --> 00:24:29.550 some standard measures like, well,

NOTE Confidence: 0.9755083

00:24:29.550 --> 00:24:30.830 are they worrying? Does the

NOTE Confidence: 0.9755083

00:24:30.830 --> 00:24:31.730 worry change?  
NOTE Confidence: 0.89770824

00:24:32.430 --> 00:24:33.490 MAIA is the multidimensional  
NOTE Confidence: 0.9660982

00:24:34.075 --> 00:24:35.675 assessment of interoceptive awareness. So  
NOTE Confidence: 0.9660982

00:24:35.675 --> 00:24:36.315 we wanted to see if  
NOTE Confidence: 0.9660982

00:24:36.315 --> 00:24:37.695 they were becoming more interoceptively  
NOTE Confidence: 0.9660982

00:24:37.994 --> 00:24:39.435 aware. That's what mindfulness training  
NOTE Confidence: 0.9660982

00:24:39.435 --> 00:24:40.955 is about. And, also, we  
NOTE Confidence: 0.9660982

00:24:40.955 --> 00:24:42.075 wanted to see if were  
NOTE Confidence: 0.9660982

00:24:42.075 --> 00:24:44.234 people less emotionally reactive? So  
NOTE Confidence: 0.9660982

00:24:44.234 --> 00:24:45.435 we took this five facet  
NOTE Confidence: 0.9660982

00:24:45.435 --> 00:24:46.795 mindfulness questionnaire, one of the  
NOTE Confidence: 0.9660982

00:24:46.795 --> 00:24:47.295 subunits  
NOTE Confidence: 0.97589403

00:24:47.730 --> 00:24:49.030 It's called the non reactivity  
NOTE Confidence: 0.97589403

00:24:49.330 --> 00:24:50.369 subscale, and we we could  
NOTE Confidence: 0.97589403

00:24:50.369 --> 00:24:51.809 see shifts in all three  
NOTE Confidence: 0.97589403

00:24:51.809 --> 00:24:52.530 of those. And we could

NOTE Confidence: 0.97589403

00:24:52.530 --> 00:24:54.950 plug those into mechanistic equations

NOTE Confidence: 0.97589403

00:24:55.010 --> 00:24:56.690 and see a mediation effect.

NOTE Confidence: 0.97589403

00:24:56.690 --> 00:24:57.570 So we were finding that

NOTE Confidence: 0.97589403

00:24:57.570 --> 00:24:59.169 mindfulness training was increasing non

NOTE Confidence: 0.97589403

00:24:59.169 --> 00:25:01.030 reactivity, emotional non reactivity,

NOTE Confidence: 0.98458403

00:25:01.414 --> 00:25:02.294 which was leading to a

NOTE Confidence: 0.98458403

00:25:02.294 --> 00:25:03.575 reduction in worry, and that

NOTE Confidence: 0.98458403

00:25:03.575 --> 00:25:05.414 reduction in worry was mediating

NOTE Confidence: 0.98458403

00:25:05.414 --> 00:25:07.434 a reduction in anxiety. So

NOTE Confidence: 0.8491052

00:25:07.815 --> 00:25:08.315 mechanistically,

NOTE Confidence: 0.970652

00:25:08.695 --> 00:25:10.415 it was acting as theorized.

NOTE Confidence: 0.970652

00:25:10.415 --> 00:25:11.734 You know, mindfulness is helping

NOTE Confidence: 0.970652

00:25:11.734 --> 00:25:12.955 people be with these unpleasant

NOTE Confidence: 0.970652

00:25:13.015 --> 00:25:14.615 emotions, but not react to

NOTE Confidence: 0.970652

00:25:14.615 --> 00:25:15.115 them.

NOTE Confidence: 0.9336723

00:25:15.500 --> 00:25:17.100 We then asked, well, is  
NOTE Confidence: 0.9336723

00:25:17.100 --> 00:25:18.000 everybody benefiting  
NOTE Confidence: 0.9280883

00:25:18.619 --> 00:25:19.740 from this or are there  
NOTE Confidence: 0.9280883

00:25:19.740 --> 00:25:21.180 subgroups? So we could actually  
NOTE Confidence: 0.9280883

00:25:21.180 --> 00:25:22.540 split out our split out  
NOTE Confidence: 0.9280883

00:25:22.540 --> 00:25:24.300 questionnaires into single items and  
NOTE Confidence: 0.9280883

00:25:24.300 --> 00:25:25.359 do cluster analyses  
NOTE Confidence: 0.9817584

00:25:25.660 --> 00:25:26.460 to see if there were  
NOTE Confidence: 0.9817584

00:25:26.460 --> 00:25:28.140 phenotypic clusters at baseline that  
NOTE Confidence: 0.9817584

00:25:28.140 --> 00:25:29.200 would predict outcomes.  
NOTE Confidence: 0.9795083

00:25:30.085 --> 00:25:31.205 You can see that they  
NOTE Confidence: 0.9795083

00:25:31.205 --> 00:25:33.365 self organized into roughly equal  
NOTE Confidence: 0.9795083

00:25:33.365 --> 00:25:34.585 clusters of three.  
NOTE Confidence: 0.93118364

00:25:35.365 --> 00:25:36.725 And, you know, let's call  
NOTE Confidence: 0.93118364

00:25:36.725 --> 00:25:37.845 them cluster one, two, and  
NOTE Confidence: 0.93118364

00:25:37.845 --> 00:25:38.804 three, it doesn't matter. You

NOTE Confidence: 0.93118364

00:25:38.804 --> 00:25:40.085 can see how they these

NOTE Confidence: 0.93118364

00:25:40.085 --> 00:25:41.125 are z scores, so these

NOTE Confidence: 0.93118364

00:25:41.125 --> 00:25:42.164 are all relative to each

NOTE Confidence: 0.93118364

00:25:42.164 --> 00:25:44.024 other. You can see some,

NOTE Confidence: 0.9833339

00:25:44.770 --> 00:25:45.590 had more

NOTE Confidence: 0.9724721

00:25:45.890 --> 00:25:47.190 were scored higher on worry,

NOTE Confidence: 0.9724721

00:25:47.490 --> 00:25:49.190 some scored lower on interoceptive

NOTE Confidence: 0.9724721

00:25:49.410 --> 00:25:51.090 awareness, and some scored higher,

NOTE Confidence: 0.9724721

00:25:51.090 --> 00:25:52.609 for example, on interoceptive awareness.

NOTE Confidence: 0.9724721

00:25:52.609 --> 00:25:53.410 So why am I telling

NOTE Confidence: 0.9724721

00:25:53.410 --> 00:25:54.790 you this? Because it matters.

NOTE Confidence: 0.9724721

00:25:55.010 --> 00:25:55.810 So if you look at

NOTE Confidence: 0.9724721

00:25:55.810 --> 00:25:56.930 cluster one, two, and three,

NOTE Confidence: 0.9724721

00:25:56.930 --> 00:25:58.609 there were actually differential treatment

NOTE Confidence: 0.9724721

00:25:58.609 --> 00:26:00.585 effects. So in this randomized

NOTE Confidence: 0.9724721

00:26:00.585 --> 00:26:01.865 controlled trial, we actually found  
NOTE Confidence: 0.9724721

00:26:01.865 --> 00:26:03.304 that group one started with  
NOTE Confidence: 0.9724721

00:26:03.304 --> 00:26:04.684 the highest amount of anxiety  
NOTE Confidence: 0.9724721

00:26:04.905 --> 00:26:06.265 and did the best. Cluster  
NOTE Confidence: 0.9724721

00:26:06.265 --> 00:26:07.544 three was somewhere in the  
NOTE Confidence: 0.9724721

00:26:07.544 --> 00:26:08.605 middle. Again,  
NOTE Confidence: 0.9715284

00:26:09.225 --> 00:26:11.145 significant reductions, but cluster two  
NOTE Confidence: 0.9715284

00:26:11.145 --> 00:26:12.684 didn't seem to move much.  
NOTE Confidence: 0.9590753

00:26:13.145 --> 00:26:14.845 And here, we haven't  
NOTE Confidence: 0.9677916

00:26:15.330 --> 00:26:16.130 we we need to take  
NOTE Confidence: 0.9677916

00:26:16.130 --> 00:26:17.010 this to the next step,  
NOTE Confidence: 0.9677916

00:26:17.010 --> 00:26:17.809 which is to ask, you  
NOTE Confidence: 0.9677916

00:26:17.809 --> 00:26:18.770 know, what is it about  
NOTE Confidence: 0.9677916

00:26:18.770 --> 00:26:20.770 being low in interoceptive awareness,  
NOTE Confidence: 0.9677916

00:26:20.770 --> 00:26:21.650 for example? You can see  
NOTE Confidence: 0.9677916

00:26:21.650 --> 00:26:23.809 these blue markers here. These

NOTE Confidence: 0.9677916

00:26:23.809 --> 00:26:24.690 are the that was the

NOTE Confidence: 0.9677916

00:26:24.690 --> 00:26:25.510 biggest differentiator.

NOTE Confidence: 0.96135473

00:26:25.970 --> 00:26:27.169 You know, are these folks

NOTE Confidence: 0.96135473

00:26:27.169 --> 00:26:28.965 that are are avoidant of

NOTE Confidence: 0.96135473

00:26:28.965 --> 00:26:30.565 unpleasant sensations? Are they, you

NOTE Confidence: 0.96135473

00:26:30.565 --> 00:26:31.445 know, do they have,

NOTE Confidence: 0.9090399

00:26:32.244 --> 00:26:33.945 anxiety? Are are their anxiety

NOTE Confidence: 0.9090399

00:26:34.005 --> 00:26:35.705 sensitivities higher, etcetera?

NOTE Confidence: 0.9938162

00:26:36.005 --> 00:26:36.965 We need to explore this

NOTE Confidence: 0.9938162

00:26:36.965 --> 00:26:38.005 more, but it suggests that

NOTE Confidence: 0.9938162

00:26:38.005 --> 00:26:39.225 it is worth exploring

NOTE Confidence: 0.9667863

00:26:39.765 --> 00:26:41.225 because, you know, at baseline,

NOTE Confidence: 0.9667863

00:26:41.445 --> 00:26:42.005 we actually,

NOTE Confidence: 0.98351157

00:26:42.440 --> 00:26:43.480 got this down to about

NOTE Confidence: 0.98351157

00:26:43.480 --> 00:26:44.920 nineteen questions when you when

NOTE Confidence: 0.98351157

00:26:44.920 --> 00:26:46.119 you ask what's the minimum  
NOTE Confidence: 0.98351157

00:26:46.119 --> 00:26:47.400 number you could ask. So  
NOTE Confidence: 0.98351157

00:26:47.400 --> 00:26:48.920 you could imagine in clinic  
NOTE Confidence: 0.98351157

00:26:48.920 --> 00:26:50.220 giving somebody a questionnaire  
NOTE Confidence: 0.9634571

00:26:50.520 --> 00:26:51.720 at on a tablet as  
NOTE Confidence: 0.9634571

00:26:51.720 --> 00:26:52.940 they're in the waiting room.  
NOTE Confidence: 0.9634571

00:26:53.000 --> 00:26:54.200 And in three minutes, you  
NOTE Confidence: 0.9634571

00:26:54.200 --> 00:26:55.080 can get you can get  
NOTE Confidence: 0.9634571

00:26:55.080 --> 00:26:55.660 a baseline,  
NOTE Confidence: 0.9559334

00:26:56.200 --> 00:26:58.055 phenotype, let's say, where you  
NOTE Confidence: 0.9559334

00:26:58.055 --> 00:26:59.015 could guess, but and that  
NOTE Confidence: 0.9559334

00:26:59.015 --> 00:27:00.215 can get beamed to your  
NOTE Confidence: 0.9559334

00:27:00.215 --> 00:27:01.575 your epic or or or  
NOTE Confidence: 0.9559334

00:27:01.575 --> 00:27:03.494 whatever your medical record is,  
NOTE Confidence: 0.9559334

00:27:03.494 --> 00:27:04.295 where it could say, okay,  
NOTE Confidence: 0.9559334

00:27:04.295 --> 00:27:05.415 there's a prediction that this

NOTE Confidence: 0.9559334

00:27:05.415 --> 00:27:07.015 person's gonna do well with

NOTE Confidence: 0.9559334

00:27:07.015 --> 00:27:08.295 this mindfulness training, or this

NOTE Confidence: 0.9559334

00:27:08.295 --> 00:27:09.655 person's not gonna do well.

NOTE Confidence: 0.9559334

00:27:09.655 --> 00:27:10.455 They might need a a

NOTE Confidence: 0.9559334

00:27:10.455 --> 00:27:11.335 booster before you,

NOTE Confidence: 0.97382736

00:27:12.010 --> 00:27:13.049 before you start, or they

NOTE Confidence: 0.97382736

00:27:13.049 --> 00:27:14.410 might need something else entirely.

NOTE Confidence: 0.97382736

00:27:14.410 --> 00:27:15.369 So we can start to

NOTE Confidence: 0.97382736

00:27:15.369 --> 00:27:16.990 even get it personalized medicine

NOTE Confidence: 0.97382736

00:27:17.130 --> 00:27:18.010 in a way that is

NOTE Confidence: 0.97382736

00:27:18.010 --> 00:27:19.210 dirt cheap. Like, this this

NOTE Confidence: 0.97382736

00:27:19.210 --> 00:27:20.350 would take pennies,

NOTE Confidence: 0.9995625

00:27:21.130 --> 00:27:22.590 to develop and deploy.

NOTE Confidence: 0.9621437

00:27:23.865 --> 00:27:25.065 I won't belabor this, but

NOTE Confidence: 0.9621437

00:27:25.065 --> 00:27:26.265 just, just to show we

NOTE Confidence: 0.9621437

00:27:26.265 --> 00:27:27.304 did, you know, the hallmark  
NOTE Confidence: 0.9621437

00:27:27.304 --> 00:27:28.505 of science is replication. So  
NOTE Confidence: 0.9621437

00:27:28.505 --> 00:27:29.545 we got some more NIH  
NOTE Confidence: 0.9621437

00:27:29.545 --> 00:27:31.225 funding to look at worry  
NOTE Confidence: 0.9621437

00:27:31.225 --> 00:27:32.825 and sleep. Many of you  
NOTE Confidence: 0.9621437

00:27:32.825 --> 00:27:33.865 probably seen this. I see  
NOTE Confidence: 0.9621437

00:27:33.865 --> 00:27:35.165 this all the time where,  
NOTE Confidence: 0.9621437

00:27:35.225 --> 00:27:36.984 you know, patients try to  
NOTE Confidence: 0.9621437

00:27:36.984 --> 00:27:37.785 go to sleep, their head  
NOTE Confidence: 0.9621437

00:27:37.785 --> 00:27:38.505 hits the pillow, and then  
NOTE Confidence: 0.9621437

00:27:38.505 --> 00:27:39.465 their brain says, it's my  
NOTE Confidence: 0.9621437

00:27:39.465 --> 00:27:40.820 turn, and they start worrying.  
NOTE Confidence: 0.9950709

00:27:41.119 --> 00:27:42.720 And so we started asking  
NOTE Confidence: 0.9950709

00:27:42.799 --> 00:27:43.840 and this is so common  
NOTE Confidence: 0.9950709

00:27:43.840 --> 00:27:44.340 that,  
NOTE Confidence: 0.9812624

00:27:45.279 --> 00:27:47.039 NIH has standardized questionnaires in

NOTE Confidence: 0.9812624

00:27:47.039 --> 00:27:48.720 the promised battery that are

NOTE Confidence: 0.9812624

00:27:48.720 --> 00:27:50.159 specifically aimed at worry and

NOTE Confidence: 0.9812624

00:27:50.159 --> 00:27:51.520 sleep. So we said, well,

NOTE Confidence: 0.9812624

00:27:51.520 --> 00:27:52.820 can we actually affect,

NOTE Confidence: 0.9795244

00:27:53.725 --> 00:27:55.205 you know, without saying anything

NOTE Confidence: 0.9795244

00:27:55.205 --> 00:27:56.484 about sleep, can we treat

NOTE Confidence: 0.9795244

00:27:56.484 --> 00:27:57.924 their anxiety and their worry

NOTE Confidence: 0.9795244

00:27:57.924 --> 00:27:59.125 and see if that helps

NOTE Confidence: 0.9795244

00:27:59.125 --> 00:28:00.024 with their sleep?

NOTE Confidence: 0.982459

00:28:00.325 --> 00:28:01.625 So we brought in people

NOTE Confidence: 0.982459

00:28:01.845 --> 00:28:03.284 who scored high on these

NOTE Confidence: 0.982459

00:28:03.284 --> 00:28:04.965 measures where worry was affecting

NOTE Confidence: 0.982459

00:28:04.965 --> 00:28:05.609 their sleep,

NOTE Confidence: 0.92427444

00:28:06.090 --> 00:28:07.369 And we asked we or

NOTE Confidence: 0.92427444

00:28:07.369 --> 00:28:08.490 two months was our primary

NOTE Confidence: 0.92427444

00:28:08.490 --> 00:28:10.570 endpoint, another randomized controlled trial,

NOTE Confidence: 0.92427444

00:28:10.570 --> 00:28:11.390 and we found

NOTE Confidence: 0.97062314

00:28:11.850 --> 00:28:12.350 that,

NOTE Confidence: 0.9070665

00:28:13.530 --> 00:28:15.290 that GAD seven scores were

NOTE Confidence: 0.9070665

00:28:15.290 --> 00:28:16.510 going down at two months.

NOTE Confidence: 0.9750955

00:28:16.970 --> 00:28:18.410 And, you know, that was

NOTE Confidence: 0.9750955

00:28:18.410 --> 00:28:19.450 that was nice to see.

NOTE Confidence: 0.9750955

00:28:19.450 --> 00:28:20.575 It wasn't quite the same

NOTE Confidence: 0.9750955

00:28:20.575 --> 00:28:21.535 reduction that we were seeing

NOTE Confidence: 0.9750955

00:28:21.535 --> 00:28:23.615 in generalized anxiety disorder. But

NOTE Confidence: 0.9750955

00:28:23.615 --> 00:28:24.494 at four months, you see

NOTE Confidence: 0.9750955

00:28:24.494 --> 00:28:25.775 that the control group catches

NOTE Confidence: 0.9750955

00:28:25.775 --> 00:28:26.975 up. Well, here we did

NOTE Confidence: 0.9750955

00:28:26.975 --> 00:28:28.175 a trial within a trial

NOTE Confidence: 0.9750955

00:28:28.175 --> 00:28:29.135 where we could, at two

NOTE Confidence: 0.9750955

00:28:29.135 --> 00:28:30.655 months, give the people in

NOTE Confidence: 0.9750955

00:28:30.655 --> 00:28:31.855 the control group the active

NOTE Confidence: 0.9750955

00:28:31.855 --> 00:28:32.355 intervention

NOTE Confidence: 0.94988894

00:28:32.734 --> 00:28:33.615 so that we could answer

NOTE Confidence: 0.94988894

00:28:33.615 --> 00:28:34.895 two questions. One, is there

NOTE Confidence: 0.94988894

00:28:34.895 --> 00:28:35.395 a

NOTE Confidence: 0.96345973

00:28:36.250 --> 00:28:37.450 is there duration? Is there

NOTE Confidence: 0.96345973

00:28:37.450 --> 00:28:38.650 durability of the effect in

NOTE Confidence: 0.96345973

00:28:38.650 --> 00:28:39.309 the people,

NOTE Confidence: 0.9599681

00:28:39.690 --> 00:28:40.890 who had primarily got the

NOTE Confidence: 0.9599681

00:28:40.890 --> 00:28:42.250 treatment? And how you know,

NOTE Confidence: 0.9599681

00:28:42.250 --> 00:28:43.370 can the control group catch

NOTE Confidence: 0.9599681

00:28:43.370 --> 00:28:44.250 up? Does this give us

NOTE Confidence: 0.9599681

00:28:44.250 --> 00:28:45.530 a replication within a trial?

NOTE Confidence: 0.9599681

00:28:45.530 --> 00:28:46.590 And here you can see

NOTE Confidence: 0.9599681

00:28:46.650 --> 00:28:48.169 that both answers were were

NOTE Confidence: 0.9599681

00:28:48.330 --> 00:28:49.305 seemed to be true.  
NOTE Confidence: 0.9389116

00:28:49.785 --> 00:28:50.745 And and so when we  
NOTE Confidence: 0.9389116

00:28:50.745 --> 00:28:51.945 looked at our the big  
NOTE Confidence: 0.9389116

00:28:51.945 --> 00:28:52.905 question was, well, how is  
NOTE Confidence: 0.9389116

00:28:52.905 --> 00:28:54.265 it affecting their sleep? You  
NOTE Confidence: 0.9389116

00:28:54.265 --> 00:28:55.785 can see significant reductions in  
NOTE Confidence: 0.9389116

00:28:55.785 --> 00:28:56.825 sleep again in our primary  
NOTE Confidence: 0.9389116

00:28:56.825 --> 00:28:58.505 endpoint. And at that four  
NOTE Confidence: 0.9389116

00:28:58.505 --> 00:28:59.785 months, the control group, you  
NOTE Confidence: 0.9389116

00:28:59.785 --> 00:29:00.665 know, caught up. They were  
NOTE Confidence: 0.9389116

00:29:00.665 --> 00:29:01.565 almost identical.  
NOTE Confidence: 0.9961698

00:29:02.185 --> 00:29:03.485 So what this suggests  
NOTE Confidence: 0.97254664

00:29:04.130 --> 00:29:05.410 is that if we actually,  
NOTE Confidence: 0.97254664

00:29:05.410 --> 00:29:07.730 you know, target the core  
NOTE Confidence: 0.97254664

00:29:07.730 --> 00:29:09.010 mechanisms you know, here we  
NOTE Confidence: 0.97254664

00:29:09.010 --> 00:29:10.870 were targeting reinforcement learning.

NOTE Confidence: 0.9803694

00:29:11.250 --> 00:29:12.290 And I'll say, you know,

NOTE Confidence: 0.9803694

00:29:12.290 --> 00:29:13.810 it it's important for any

NOTE Confidence: 0.9803694

00:29:13.810 --> 00:29:15.490 type of treatment developments, whether

NOTE Confidence: 0.9803694

00:29:15.490 --> 00:29:16.930 it's in person, whether it's

NOTE Confidence: 0.9803694

00:29:16.930 --> 00:29:17.430 digital.

NOTE Confidence: 0.94404167

00:29:17.865 --> 00:29:19.465 And also this will now

NOTE Confidence: 0.94404167

00:29:19.465 --> 00:29:21.065 start applying to AI based

NOTE Confidence: 0.94404167

00:29:21.065 --> 00:29:21.565 methodologies,

NOTE Confidence: 0.9962575

00:29:22.105 --> 00:29:23.625 it's really important that we

NOTE Confidence: 0.9962575

00:29:23.625 --> 00:29:25.485 start first with mechanism.

NOTE Confidence: 0.99555796

00:29:26.105 --> 00:29:27.085 And I think

NOTE Confidence: 0.98968637

00:29:27.465 --> 00:29:29.405 mechanism can help drive efficiency

NOTE Confidence: 0.98968637

00:29:29.625 --> 00:29:30.365 and efficacy,

NOTE Confidence: 0.9928856

00:29:31.360 --> 00:29:32.880 when we when we target

NOTE Confidence: 0.9928856

00:29:32.880 --> 00:29:33.919 the treatments to that as

NOTE Confidence: 0.9928856

00:29:33.919 --> 00:29:35.279 compared to starting with, you  
NOTE Confidence: 0.9928856

00:29:35.279 --> 00:29:36.399 know, the kitchen sink approach  
NOTE Confidence: 0.9928856

00:29:36.399 --> 00:29:37.279 and then trying to do  
NOTE Confidence: 0.9928856

00:29:37.279 --> 00:29:38.799 dismantling studies to see what  
NOTE Confidence: 0.9928856

00:29:38.799 --> 00:29:39.940 what the effect is.  
NOTE Confidence: 0.9829407

00:29:40.480 --> 00:29:41.679 So now I'm gonna spend  
NOTE Confidence: 0.9829407

00:29:41.679 --> 00:29:42.500 a few minutes,  
NOTE Confidence: 0.9699449

00:29:42.880 --> 00:29:44.425 just to talk a little  
NOTE Confidence: 0.9699449

00:29:44.425 --> 00:29:45.625 bit about some of the  
NOTE Confidence: 0.9699449

00:29:45.625 --> 00:29:46.905 neuro mechanisms, and then we'll  
NOTE Confidence: 0.9699449

00:29:46.905 --> 00:29:48.605 get into some pragmatic stuff  
NOTE Confidence: 0.9699449

00:29:48.665 --> 00:29:50.185 that hopefully will be clinically  
NOTE Confidence: 0.9699449

00:29:50.185 --> 00:29:51.645 useful, for anybody.  
NOTE Confidence: 0.9424658

00:29:52.425 --> 00:29:53.965 I I like this. There's  
NOTE Confidence: 0.9712532

00:29:54.825 --> 00:29:56.025 some many of you may  
NOTE Confidence: 0.9712532

00:29:56.025 --> 00:29:57.385 not recognize this person. This

NOTE Confidence: 0.9712532

00:29:57.385 --> 00:29:58.745 is Lolo Jones, a picture

NOTE Confidence: 0.9712532

00:29:58.745 --> 00:30:00.240 of her from a little

NOTE Confidence: 0.9712532

00:30:00.240 --> 00:30:01.200 while ago. She's,

NOTE Confidence: 0.9736784

00:30:01.680 --> 00:30:02.560 she was actually a three

NOTE Confidence: 0.9736784

00:30:02.560 --> 00:30:03.760 time Olympian. Back in two

NOTE Confidence: 0.9736784

00:30:03.760 --> 00:30:04.980 thousand eight, she was favored

NOTE Confidence: 0.9736784

00:30:05.200 --> 00:30:06.480 to win the hurdles at

NOTE Confidence: 0.9736784

00:30:06.480 --> 00:30:07.840 the Beijing Olympics. And I

NOTE Confidence: 0.9736784

00:30:07.840 --> 00:30:08.900 use her as a story

NOTE Confidence: 0.9736784

00:30:09.120 --> 00:30:09.920 because she had made it

NOTE Confidence: 0.9736784

00:30:09.920 --> 00:30:10.560 all the way through the

NOTE Confidence: 0.9736784

00:30:10.560 --> 00:30:11.840 preliminary. She was favored to

NOTE Confidence: 0.9736784

00:30:11.840 --> 00:30:13.280 win. She was in the

NOTE Confidence: 0.9736784

00:30:13.280 --> 00:30:14.320 finals at the ninth of

NOTE Confidence: 0.9736784

00:30:14.320 --> 00:30:15.060 ten hurdles.

NOTE Confidence: 0.9609209

00:30:15.575 --> 00:30:16.695 And then I'll read a  
NOTE Confidence: 0.9609209

00:30:16.695 --> 00:30:18.135 quote from, that she gave  
NOTE Confidence: 0.9609209

00:30:18.135 --> 00:30:19.255 to Time magazine where she  
NOTE Confidence: 0.9609209

00:30:19.255 --> 00:30:20.555 said, you know,  
NOTE Confidence: 0.9677885

00:30:20.934 --> 00:30:21.575 I was just in an  
NOTE Confidence: 0.9677885

00:30:21.575 --> 00:30:22.615 amazing rhythm, and then I  
NOTE Confidence: 0.9677885

00:30:22.615 --> 00:30:23.495 knew at one point I  
NOTE Confidence: 0.9677885

00:30:23.495 --> 00:30:24.535 was winning the race. It  
NOTE Confidence: 0.9677885

00:30:24.535 --> 00:30:25.815 wasn't like, oh, I'm winning  
NOTE Confidence: 0.9677885

00:30:25.815 --> 00:30:26.775 the Olympic gold medal. It  
NOTE Confidence: 0.9677885

00:30:26.775 --> 00:30:28.135 just seemed like another race.  
NOTE Confidence: 0.9677885

00:30:28.135 --> 00:30:29.735 And then I was telling  
NOTE Confidence: 0.9677885

00:30:29.735 --> 00:30:30.235 myself,  
NOTE Confidence: 0.9595681

00:30:31.890 --> 00:30:33.090 to make sure that my  
NOTE Confidence: 0.9595681

00:30:33.090 --> 00:30:34.690 legs were snapping out, so  
NOTE Confidence: 0.9595681

00:30:34.690 --> 00:30:35.910 I over tried.

NOTE Confidence: 0.9829729

00:30:36.610 --> 00:30:37.650 That's when I hit the

NOTE Confidence: 0.9829729

00:30:37.650 --> 00:30:38.690 hurdle. So she clipped the

NOTE Confidence: 0.9829729

00:30:38.690 --> 00:30:39.650 ninth of ten hurdles. She

NOTE Confidence: 0.9829729

00:30:39.650 --> 00:30:41.430 finished seventh. It was devastating

NOTE Confidence: 0.9829729

00:30:41.490 --> 00:30:42.610 for her career, hard to

NOTE Confidence: 0.9829729

00:30:42.610 --> 00:30:43.590 recover from that.

NOTE Confidence: 0.9886122

00:30:44.210 --> 00:30:45.810 But the highlight here is

NOTE Confidence: 0.9886122

00:30:45.810 --> 00:30:47.294 not that not that this

NOTE Confidence: 0.9886122

00:30:47.294 --> 00:30:47.794 is

NOTE Confidence: 0.90241647

00:30:48.174 --> 00:30:49.534 a a tragedy, it certainly

NOTE Confidence: 0.90241647

00:30:49.534 --> 00:30:50.434 was for her,

NOTE Confidence: 0.9380012

00:30:50.735 --> 00:30:52.674 but it highlights something where

NOTE Confidence: 0.9380012

00:30:52.735 --> 00:30:54.174 if we if we rely

NOTE Confidence: 0.9380012

00:30:54.174 --> 00:30:55.534 too much on this thinking

NOTE Confidence: 0.9380012

00:30:55.534 --> 00:30:56.815 part of our brain, we

NOTE Confidence: 0.9380012

00:30:56.815 --> 00:30:57.934 kinda get in our way  
NOTE Confidence: 0.9380012

00:30:57.934 --> 00:30:59.695 or as this, as teacher  
NOTE Confidence: 0.9380012

00:30:59.695 --> 00:31:00.575 put it, your me is  
NOTE Confidence: 0.9380012

00:31:00.575 --> 00:31:01.315 in the way.  
NOTE Confidence: 0.99045706

00:31:01.730 --> 00:31:02.610 And so we can start  
NOTE Confidence: 0.99045706

00:31:02.610 --> 00:31:03.110 asking,  
NOTE Confidence: 0.977821

00:31:03.570 --> 00:31:04.930 well, how often does the  
NOTE Confidence: 0.977821

00:31:04.930 --> 00:31:05.890 me get in the way?  
NOTE Confidence: 0.977821

00:31:06.050 --> 00:31:07.570 Back in two thousand ten,  
NOTE Confidence: 0.977821

00:31:07.570 --> 00:31:08.870 there was a famous study,  
NOTE Confidence: 0.9903186

00:31:09.410 --> 00:31:10.290 that came out of Harvard,  
NOTE Confidence: 0.9903186

00:31:10.290 --> 00:31:11.830 one of the first, ecological  
NOTE Confidence: 0.9903186

00:31:11.970 --> 00:31:12.950 momentary assessment  
NOTE Confidence: 0.9326749

00:31:13.330 --> 00:31:15.350 studies using an an iPhone,  
NOTE Confidence: 0.9407615

00:31:16.195 --> 00:31:17.555 where they just probe people,  
NOTE Confidence: 0.9407615

00:31:17.555 --> 00:31:18.515 and and they found that

NOTE Confidence: 0.9407615

00:31:18.515 --> 00:31:19.715 forty percent of waking life

NOTE Confidence: 0.9407615

00:31:19.715 --> 00:31:21.335 people are daydreaming. They're thinking

NOTE Confidence: 0.9407615

00:31:21.395 --> 00:31:22.675 caught in the past, the

NOTE Confidence: 0.9407615

00:31:22.675 --> 00:31:23.175 future,

NOTE Confidence: 0.9962484

00:31:23.555 --> 00:31:24.595 rarely present. So you can

NOTE Confidence: 0.9962484

00:31:24.595 --> 00:31:25.635 think of getting caught up

NOTE Confidence: 0.9962484

00:31:25.635 --> 00:31:26.375 in daydreaming

NOTE Confidence: 0.9828573

00:31:26.675 --> 00:31:27.715 about half the you know,

NOTE Confidence: 0.9828573

00:31:27.715 --> 00:31:29.070 if you pay attention for

NOTE Confidence: 0.9828573

00:31:29.149 --> 00:31:30.509 forty eight percent of this

NOTE Confidence: 0.9828573

00:31:30.509 --> 00:31:31.789 lecture, then you're you're beating

NOTE Confidence: 0.9828573

00:31:31.789 --> 00:31:32.529 the averages.

NOTE Confidence: 0.9777872

00:31:33.710 --> 00:31:34.429 But you can think of

NOTE Confidence: 0.9777872

00:31:34.429 --> 00:31:35.230 that as getting caught up

NOTE Confidence: 0.9777872

00:31:35.230 --> 00:31:36.669 in our experience. On top

NOTE Confidence: 0.9777872

00:31:36.669 --> 00:31:37.470 of that, when we get  
NOTE Confidence: 0.9777872

00:31:37.470 --> 00:31:38.669 stressed out, a little harder  
NOTE Confidence: 0.9777872

00:31:38.669 --> 00:31:39.630 to get you know, to  
NOTE Confidence: 0.9777872

00:31:39.630 --> 00:31:40.509 tell our you know, to  
NOTE Confidence: 0.9777872

00:31:40.509 --> 00:31:41.309 snap out of that and  
NOTE Confidence: 0.9777872

00:31:41.309 --> 00:31:42.590 say, oh, pay attention, you  
NOTE Confidence: 0.9777872

00:31:42.590 --> 00:31:43.889 know, stop being stressed.  
NOTE Confidence: 0.96615374

00:31:44.535 --> 00:31:45.495 So when we're stressed, we're  
NOTE Confidence: 0.96615374

00:31:45.495 --> 00:31:46.215 a little more caught up.  
NOTE Confidence: 0.96615374

00:31:46.215 --> 00:31:47.575 And I like to think  
NOTE Confidence: 0.96615374

00:31:47.575 --> 00:31:48.695 of this as a continuum  
NOTE Confidence: 0.96615374

00:31:48.695 --> 00:31:49.895 where with addiction, we're at  
NOTE Confidence: 0.96615374

00:31:49.895 --> 00:31:50.535 the far end of the  
NOTE Confidence: 0.96615374

00:31:50.535 --> 00:31:51.655 spectrum. We could be fully  
NOTE Confidence: 0.96615374

00:31:51.655 --> 00:31:53.415 aware of what's happening, but  
NOTE Confidence: 0.96615374

00:31:53.415 --> 00:31:54.535 completely out of control. You

NOTE Confidence: 0.96615374  
00:31:54.535 --> 00:31:56.295 know, continued use despite adverse  
NOTE Confidence: 0.96615374  
00:31:56.295 --> 00:31:57.915 consequences. I think that was  
NOTE Confidence: 0.96615374  
00:31:58.100 --> 00:31:59.000 one of the definitions  
NOTE Confidence: 0.9169226  
00:31:59.380 --> 00:32:00.580 of addiction that I still  
NOTE Confidence: 0.9169226  
00:32:00.580 --> 00:32:02.020 carry forward that I I  
NOTE Confidence: 0.9169226  
00:32:02.020 --> 00:32:02.820 I might have learned that  
NOTE Confidence: 0.9169226  
00:32:02.820 --> 00:32:04.180 from Mark Bettenger or somebody  
NOTE Confidence: 0.9169226  
00:32:04.180 --> 00:32:06.200 in residency. Really simple.  
NOTE Confidence: 0.9829814  
00:32:06.900 --> 00:32:08.420 It it it's still it's  
NOTE Confidence: 0.9829814  
00:32:08.420 --> 00:32:10.040 still used today. So  
NOTE Confidence: 0.99892217  
00:32:10.505 --> 00:32:11.625 so caught up that we  
NOTE Confidence: 0.99892217  
00:32:11.625 --> 00:32:12.525 can't get out.  
NOTE Confidence: 0.9946573  
00:32:12.985 --> 00:32:14.025 So what does that actually  
NOTE Confidence: 0.9946573  
00:32:14.025 --> 00:32:15.145 look like? What's that feel  
NOTE Confidence: 0.9946573  
00:32:15.145 --> 00:32:16.525 like in our direct experience?  
NOTE Confidence: 0.9848388

00:32:16.825 --> 00:32:18.265 About ten years ago, a  
NOTE Confidence: 0.9848388

00:32:18.265 --> 00:32:19.885 research group in in,  
NOTE Confidence: 0.9388315

00:32:20.825 --> 00:32:22.745 Europe started asking us questions,  
NOTE Confidence: 0.9388315

00:32:22.745 --> 00:32:23.785 then they started doing these  
NOTE Confidence: 0.9388315

00:32:23.785 --> 00:32:26.010 body maps of emotions. And  
NOTE Confidence: 0.9388315

00:32:26.010 --> 00:32:27.049 so if you think of  
NOTE Confidence: 0.9388315

00:32:27.049 --> 00:32:28.669 a time recently when you  
NOTE Confidence: 0.970327

00:32:29.049 --> 00:32:30.590 were afraid or anxious,  
NOTE Confidence: 0.9561758

00:32:30.890 --> 00:32:32.490 sure that never happens to  
NOTE Confidence: 0.9561758

00:32:32.490 --> 00:32:33.850 the residents here, but just  
NOTE Confidence: 0.9561758

00:32:33.850 --> 00:32:35.630 imagine, you know, being anxious,  
NOTE Confidence: 0.97497076

00:32:36.490 --> 00:32:37.905 and and just feel where  
NOTE Confidence: 0.97497076

00:32:37.905 --> 00:32:38.745 you feel that in your  
NOTE Confidence: 0.97497076

00:32:38.745 --> 00:32:39.945 body. And if you, you  
NOTE Confidence: 0.97497076

00:32:39.945 --> 00:32:40.905 do that for a second,  
NOTE Confidence: 0.97497076

00:32:40.905 --> 00:32:41.805 you might notice

NOTE Confidence: 0.9734704

00:32:42.105 --> 00:32:43.625 whether it's fear or anxiety,

NOTE Confidence: 0.9734704

00:32:43.625 --> 00:32:44.345 we kind of feel that

NOTE Confidence: 0.9734704

00:32:44.345 --> 00:32:45.545 in our chest, that, that,

NOTE Confidence: 0.9734704

00:32:45.545 --> 00:32:47.565 that closed down contracted feeling.

NOTE Confidence: 0.9734704

00:32:47.865 --> 00:32:49.705 And so that contraction, you

NOTE Confidence: 0.9734704

00:32:49.705 --> 00:32:50.505 know, it's, you can think

NOTE Confidence: 0.9734704

00:32:50.505 --> 00:32:51.465 of it as a protective

NOTE Confidence: 0.9734704

00:32:51.465 --> 00:32:52.910 mechanism. We're, we're closing down

NOTE Confidence: 0.9734704

00:32:52.910 --> 00:32:54.450 to protect our vital organs.

NOTE Confidence: 0.9649718

00:32:54.910 --> 00:32:56.750 So if that's happening, even,

NOTE Confidence: 0.9649718

00:32:56.750 --> 00:32:58.110 you know, fifty, fifty percent

NOTE Confidence: 0.9649718

00:32:58.110 --> 00:32:58.990 of waking life when, you

NOTE Confidence: 0.9649718

00:32:58.990 --> 00:33:00.429 know, that little contraction that

NOTE Confidence: 0.9649718

00:33:00.429 --> 00:33:02.110 comes with daydreaming, we can

NOTE Confidence: 0.9649718

00:33:02.110 --> 00:33:03.150 start to map this out.

NOTE Confidence: 0.9649718

00:33:03.150 --> 00:33:04.590 And I'm sure all of  
NOTE Confidence: 0.9649718

00:33:04.590 --> 00:33:05.070 you,  
NOTE Confidence: 0.9614008

00:33:05.549 --> 00:33:07.150 are familiar with this default  
NOTE Confidence: 0.9614008

00:33:07.150 --> 00:33:07.809 one network,  
NOTE Confidence: 0.9464988

00:33:08.635 --> 00:33:10.155 discovered back in year two  
NOTE Confidence: 0.9464988

00:33:10.155 --> 00:33:11.755 thousand, Mark Raeckel's group at  
NOTE Confidence: 0.9464988

00:33:11.755 --> 00:33:13.195 WashU. In fact, he sat  
NOTE Confidence: 0.9464988

00:33:13.195 --> 00:33:14.315 on his data for several  
NOTE Confidence: 0.9464988

00:33:14.315 --> 00:33:15.355 years because he wasn't sure  
NOTE Confidence: 0.9464988

00:33:15.355 --> 00:33:15.915 what to make of it.  
NOTE Confidence: 0.9464988

00:33:15.915 --> 00:33:17.135 Because he had given people  
NOTE Confidence: 0.9464988

00:33:17.275 --> 00:33:18.315 the simple task, which is  
NOTE Confidence: 0.9464988

00:33:18.315 --> 00:33:19.535 lay still in the scanner  
NOTE Confidence: 0.9464988

00:33:19.595 --> 00:33:20.635 and don't do anything in  
NOTE Confidence: 0.9464988

00:33:20.635 --> 00:33:21.900 particular. And, you know, he  
NOTE Confidence: 0.9464988

00:33:21.900 --> 00:33:23.340 got this consistent finding over

NOTE Confidence: 0.9464988  
00:33:23.340 --> 00:33:24.460 and over and over and  
NOTE Confidence: 0.9464988  
00:33:24.460 --> 00:33:25.500 wasn't sure what to do.  
NOTE Confidence: 0.9464988  
00:33:25.500 --> 00:33:26.460 So he published it as  
NOTE Confidence: 0.9464988  
00:33:26.460 --> 00:33:27.200 his inaugural  
NOTE Confidence: 0.9641254  
00:33:27.820 --> 00:33:29.420 paper in in, when he  
NOTE Confidence: 0.9641254  
00:33:29.420 --> 00:33:30.620 was inaugurated into the National  
NOTE Confidence: 0.9641254  
00:33:30.620 --> 00:33:31.820 Academy of Sciences because they  
NOTE Confidence: 0.9641254  
00:33:31.820 --> 00:33:33.340 kinda lightly review, you know,  
NOTE Confidence: 0.9641254  
00:33:33.340 --> 00:33:34.835 your inaugural paper. And it  
NOTE Confidence: 0.9641254  
00:33:34.835 --> 00:33:35.395 turns out to be one  
NOTE Confidence: 0.9641254  
00:33:35.395 --> 00:33:36.435 of the most cited and  
NOTE Confidence: 0.9641254  
00:33:36.435 --> 00:33:38.035 reproducible findings in all of  
NOTE Confidence: 0.9641254  
00:33:38.035 --> 00:33:38.535 neuroscience.  
NOTE Confidence: 0.99666333  
00:33:39.315 --> 00:33:40.675 So without going into all  
NOTE Confidence: 0.99666333  
00:33:40.675 --> 00:33:41.495 of that history,  
NOTE Confidence: 0.9994833

00:33:41.795 --> 00:33:42.775 there's this network  
NOTE Confidence: 0.98520845

00:33:43.075 --> 00:33:44.115 that seems to be self  
NOTE Confidence: 0.98520845

00:33:44.115 --> 00:33:45.635 referential. Didn't even he didn't  
NOTE Confidence: 0.98520845

00:33:45.635 --> 00:33:46.835 even know nobody knew what  
NOTE Confidence: 0.98520845

00:33:46.835 --> 00:33:48.050 was actually happening at that  
NOTE Confidence: 0.98520845

00:33:48.050 --> 00:33:49.490 time, but over the span  
NOTE Confidence: 0.98520845

00:33:49.490 --> 00:33:50.610 of the next decade and  
NOTE Confidence: 0.98520845

00:33:50.610 --> 00:33:52.130 and still continuing, people are  
NOTE Confidence: 0.98520845

00:33:52.130 --> 00:33:53.730 starting to get into that  
NOTE Confidence: 0.98520845

00:33:53.730 --> 00:33:54.230 more.  
NOTE Confidence: 0.96297747

00:33:54.610 --> 00:33:56.450 So for example, and I'm  
NOTE Confidence: 0.96297747

00:33:56.450 --> 00:33:57.970 gonna highlight these two hubs  
NOTE Confidence: 0.96297747

00:33:57.970 --> 00:33:59.090 of the default mode network  
NOTE Confidence: 0.96297747

00:33:59.090 --> 00:34:00.530 here, the the medial prefrontal  
NOTE Confidence: 0.96297747

00:34:00.530 --> 00:34:02.070 cortex and the posterior cingulate  
NOTE Confidence: 0.96297747

00:34:02.235 --> 00:34:03.215 cortex. So for example,

NOTE Confidence: 0.86954844

00:34:03.755 --> 00:34:05.295 a study in twenty sixteen

NOTE Confidence: 0.86954844

00:34:05.595 --> 00:34:07.275 showing the only manipulation in

NOTE Confidence: 0.86954844

00:34:07.275 --> 00:34:08.234 this study, this is in

NOTE Confidence: 0.86954844

00:34:08.234 --> 00:34:08.734 adolescence,

NOTE Confidence: 0.93598354

00:34:09.114 --> 00:34:10.734 shown their own Instagram feeds.

NOTE Confidence: 0.9818276

00:34:11.114 --> 00:34:12.715 They manipulated how many likes

NOTE Confidence: 0.9818276

00:34:12.715 --> 00:34:14.795 each picture got. And, what

NOTE Confidence: 0.9818276

00:34:14.795 --> 00:34:16.109 they found was that they

NOTE Confidence: 0.9818276

00:34:16.109 --> 00:34:18.190 were activating these reward pathways,

NOTE Confidence: 0.9818276

00:34:18.190 --> 00:34:19.549 like the nucleus accumbens was

NOTE Confidence: 0.9818276

00:34:19.549 --> 00:34:20.049 activated,

NOTE Confidence: 0.94663656

00:34:20.430 --> 00:34:21.710 but also they were activating

NOTE Confidence: 0.94663656

00:34:21.710 --> 00:34:23.230 these self referential networks, like

NOTE Confidence: 0.94663656

00:34:23.230 --> 00:34:25.170 the posterior singlet shown here

NOTE Confidence: 0.94663656

00:34:25.390 --> 00:34:26.269 in the in the red

NOTE Confidence: 0.94663656

00:34:26.269 --> 00:34:26.769 circle.  
NOTE Confidence: 0.9573995

00:34:27.069 --> 00:34:28.369 Well, it's not just adolescents  
NOTE Confidence: 0.9573995

00:34:28.509 --> 00:34:29.664 who get excited about, you  
NOTE Confidence: 0.9573995

00:34:29.664 --> 00:34:31.105 know, that their picture's got  
NOTE Confidence: 0.9573995

00:34:31.105 --> 00:34:32.085 a bunch of likes,  
NOTE Confidence: 0.9550811

00:34:32.385 --> 00:34:33.825 even though it's arbitrary in  
NOTE Confidence: 0.9550811

00:34:33.825 --> 00:34:36.005 an fMRI scanner. Hugh Gerevan,  
NOTE Confidence: 0.9550811

00:34:36.065 --> 00:34:37.585 for example, showed that these  
NOTE Confidence: 0.9550811

00:34:37.585 --> 00:34:39.105 these regions get activated in  
NOTE Confidence: 0.9550811

00:34:39.105 --> 00:34:39.984 people who are addicted to  
NOTE Confidence: 0.9550811

00:34:39.984 --> 00:34:41.585 cocaine or shown pictures of  
NOTE Confidence: 0.9550811

00:34:41.585 --> 00:34:42.065 people,  
NOTE Confidence: 0.9889791

00:34:42.385 --> 00:34:43.950 smoking crack cocaine.  
NOTE Confidence: 0.9307876

00:34:44.570 --> 00:34:46.170 Amy Jane's developed this great  
NOTE Confidence: 0.9307876

00:34:46.170 --> 00:34:46.670 paradigm,  
NOTE Confidence: 0.9783397

00:34:47.290 --> 00:34:48.410 in people who are addicted

NOTE Confidence: 0.9783397

00:34:48.410 --> 00:34:50.250 to cigarettes, showing that posterior

NOTE Confidence: 0.9783397

00:34:50.250 --> 00:34:52.170 cingulate and medial prefrontal cortex

NOTE Confidence: 0.9783397

00:34:52.170 --> 00:34:53.370 light up like Christmas like

NOTE Confidence: 0.9783397

00:34:53.370 --> 00:34:54.489 a Christmas tree when you

NOTE Confidence: 0.9783397

00:34:54.489 --> 00:34:56.184 show them cues. We see

NOTE Confidence: 0.9783397

00:34:56.184 --> 00:34:57.944 the same thing in gambling,

NOTE Confidence: 0.9783397

00:34:57.944 --> 00:34:59.645 you know, etcetera, etcetera, etcetera.

NOTE Confidence: 0.9878173

00:35:00.424 --> 00:35:01.164 And also

NOTE Confidence: 0.96371603

00:35:01.464 --> 00:35:03.164 it's not just about craving,

NOTE Confidence: 0.96371603

00:35:03.224 --> 00:35:03.724 but,

NOTE Confidence: 0.9985664

00:35:04.025 --> 00:35:05.085 this was a study,

NOTE Confidence: 0.9561425

00:35:06.585 --> 00:35:07.704 published back in two thousand

NOTE Confidence: 0.9561425

00:35:07.704 --> 00:35:08.825 and seven showing that when

NOTE Confidence: 0.9561425

00:35:08.825 --> 00:35:09.325 people

NOTE Confidence: 0.99888617

00:35:10.025 --> 00:35:10.525 resist

NOTE Confidence: 0.9295453

00:35:11.559 --> 00:35:13.160 cravings, when they resist a  
NOTE Confidence: 0.9295453

00:35:13.160 --> 00:35:14.920 craving, they're also activating this  
NOTE Confidence: 0.9295453

00:35:14.920 --> 00:35:16.200 default mode network. And if  
NOTE Confidence: 0.9295453

00:35:16.200 --> 00:35:17.880 you compare just the the  
NOTE Confidence: 0.9295453

00:35:17.880 --> 00:35:18.380 resists,  
NOTE Confidence: 0.93493354

00:35:18.839 --> 00:35:20.359 you know, even to accepting  
NOTE Confidence: 0.93493354

00:35:20.359 --> 00:35:21.819 a craving that that  
NOTE Confidence: 0.9991299

00:35:22.200 --> 00:35:23.739 really seems to localize  
NOTE Confidence: 0.9577915

00:35:24.245 --> 00:35:25.844 to the posterior cingulate, maybe  
NOTE Confidence: 0.9577915

00:35:25.844 --> 00:35:26.645 a little bit of the  
NOTE Confidence: 0.9577915

00:35:26.645 --> 00:35:28.505 medial prefrontal cortex as well.  
NOTE Confidence: 0.9577915

00:35:28.725 --> 00:35:29.765 So keep this in mind,  
NOTE Confidence: 0.9577915

00:35:29.765 --> 00:35:31.685 this resistance, this contraction. And  
NOTE Confidence: 0.9577915

00:35:31.685 --> 00:35:32.805 when we resist something, we  
NOTE Confidence: 0.9577915

00:35:32.805 --> 00:35:34.405 tend to grit our  
NOTE Confidence: 0.9577915

00:35:34.405 --> 00:35:35.844 teeth and resist, which can

NOTE Confidence: 0.9577915  
00:35:35.844 --> 00:35:37.445 also sound familiar. I'm gonna  
NOTE Confidence: 0.9577915  
00:35:37.445 --> 00:35:37.945 resist  
NOTE Confidence: 0.9591207  
00:35:38.390 --> 00:35:39.350 smoking a cigarette. I'm gonna  
NOTE Confidence: 0.9591207  
00:35:39.350 --> 00:35:41.270 resist eating the croissant as  
NOTE Confidence: 0.9591207  
00:35:41.270 --> 00:35:42.870 compared to the, healthier egg  
NOTE Confidence: 0.9591207  
00:35:42.870 --> 00:35:43.370 thing.  
NOTE Confidence: 0.97184485  
00:35:43.670 --> 00:35:44.950 So what's that like? And  
NOTE Confidence: 0.97184485  
00:35:44.950 --> 00:35:46.550 also, I'll just add into  
NOTE Confidence: 0.97184485  
00:35:46.550 --> 00:35:47.670 this. This isn't just about  
NOTE Confidence: 0.97184485  
00:35:47.670 --> 00:35:48.170 addiction.  
NOTE Confidence: 0.99589765  
00:35:48.630 --> 00:35:50.469 We also see similar things,  
NOTE Confidence: 0.99980694  
00:35:50.870 --> 00:35:51.370 in  
NOTE Confidence: 0.9354227  
00:35:52.094 --> 00:35:53.695 anxiety. So this was a  
NOTE Confidence: 0.9354227  
00:35:53.695 --> 00:35:54.895 a study where they found  
NOTE Confidence: 0.9354227  
00:35:54.895 --> 00:35:56.255 that the more people worried  
NOTE Confidence: 0.9354227

00:35:56.335 --> 00:35:57.535 this is the if we  
NOTE Confidence: 0.9354227

00:35:57.535 --> 00:35:58.755 focus on the orange  
NOTE Confidence: 0.9662237

00:35:59.135 --> 00:36:00.755 regions of activation here,  
NOTE Confidence: 0.9350324

00:36:01.055 --> 00:36:02.094 the more people worried, the  
NOTE Confidence: 0.9350324

00:36:02.094 --> 00:36:03.215 more they were activating their  
NOTE Confidence: 0.9350324

00:36:03.215 --> 00:36:05.155 posterior cingulate and medial prefrontal  
NOTE Confidence: 0.9350324

00:36:05.215 --> 00:36:07.020 cortex. So in work that  
NOTE Confidence: 0.9350324

00:36:07.020 --> 00:36:08.300 we did with in collaboration  
NOTE Confidence: 0.9350324

00:36:08.300 --> 00:36:10.000 with, Sue Whitfield Gabrielli,  
NOTE Confidence: 0.9672857

00:36:11.420 --> 00:36:13.040 now back ten years ago,  
NOTE Confidence: 0.9672857

00:36:13.260 --> 00:36:14.540 we started asking this question,  
NOTE Confidence: 0.9672857

00:36:14.540 --> 00:36:15.980 well, what's common here? You  
NOTE Confidence: 0.9672857

00:36:15.980 --> 00:36:17.020 know, we see all these  
NOTE Confidence: 0.9672857

00:36:17.020 --> 00:36:18.380 different findings. It wasn't just  
NOTE Confidence: 0.9672857

00:36:18.380 --> 00:36:19.260 an addiction. It was in  
NOTE Confidence: 0.9672857

00:36:19.260 --> 00:36:20.400 all these different things.

NOTE Confidence: 0.99596995

00:36:20.765 --> 00:36:21.805 Could it be that we're

NOTE Confidence: 0.99596995

00:36:21.805 --> 00:36:22.844 getting caught up in our

NOTE Confidence: 0.99596995

00:36:22.844 --> 00:36:24.125 experience? Could that be the

NOTE Confidence: 0.99596995

00:36:24.125 --> 00:36:25.565 marker? And we could actually

NOTE Confidence: 0.99596995

00:36:25.565 --> 00:36:26.625 test this directly

NOTE Confidence: 0.96050805

00:36:26.925 --> 00:36:28.765 because mindfulness training, you could

NOTE Confidence: 0.96050805

00:36:28.765 --> 00:36:29.805 say, you know, in a

NOTE Confidence: 0.96050805

00:36:29.805 --> 00:36:31.405 nutshell, is is about not

NOTE Confidence: 0.96050805

00:36:31.405 --> 00:36:32.285 getting caught up in our

NOTE Confidence: 0.96050805

00:36:32.285 --> 00:36:33.405 experience, getting out of our

NOTE Confidence: 0.96050805

00:36:33.405 --> 00:36:34.145 own way.

NOTE Confidence: 0.97674793

00:36:34.700 --> 00:36:36.380 So this was a study,

NOTE Confidence: 0.97674793

00:36:36.619 --> 00:36:37.739 so we did a study

NOTE Confidence: 0.97674793

00:36:37.739 --> 00:36:39.039 back when I was first

NOTE Confidence: 0.97340137

00:36:39.339 --> 00:36:40.960 cutting my teeth on neuroimaging,

NOTE Confidence: 0.92073303

00:36:41.739 --> 00:36:42.539 and it was actually a  
NOTE Confidence: 0.92073303

00:36:42.539 --> 00:36:43.759 suggestion of Mark Potenza  
NOTE Confidence: 0.9566007

00:36:44.059 --> 00:36:45.660 where, you know, people were  
NOTE Confidence: 0.9566007

00:36:45.660 --> 00:36:47.339 just starting to publish studies  
NOTE Confidence: 0.9566007

00:36:47.339 --> 00:36:48.700 of of experienced meditator. And  
NOTE Confidence: 0.9566007

00:36:48.700 --> 00:36:49.500 he said, why don't you  
NOTE Confidence: 0.9566007

00:36:49.500 --> 00:36:50.355 do a study like that?  
NOTE Confidence: 0.9566007

00:36:50.355 --> 00:36:51.094 I'm like, oh,  
NOTE Confidence: 0.9573771

00:36:51.395 --> 00:36:52.594 I don't and he's like,  
NOTE Confidence: 0.9573771

00:36:52.594 --> 00:36:53.555 yeah. Just think about it.  
NOTE Confidence: 0.9573771

00:36:53.555 --> 00:36:54.114 And so I thought about  
NOTE Confidence: 0.9573771

00:36:54.114 --> 00:36:54.594 it. I was like, oh,  
NOTE Confidence: 0.9573771

00:36:54.594 --> 00:36:55.975 that's actually a great idea.  
NOTE Confidence: 0.9926783

00:36:56.355 --> 00:36:57.575 So long story short,  
NOTE Confidence: 0.9879653

00:36:58.035 --> 00:36:59.155 we did a study where  
NOTE Confidence: 0.9879653

00:36:59.155 --> 00:37:00.355 we looked at experienced versus

NOTE Confidence: 0.9879653

00:37:00.355 --> 00:37:01.875 novice meditators. We looked across

NOTE Confidence: 0.9879653

00:37:01.875 --> 00:37:03.335 three different types of meditation,

NOTE Confidence: 0.97021705

00:37:03.920 --> 00:37:05.040 looking to see what was

NOTE Confidence: 0.97021705

00:37:05.040 --> 00:37:06.400 common, not what was different,

NOTE Confidence: 0.97021705

00:37:06.400 --> 00:37:07.920 not which was better or

NOTE Confidence: 0.97021705

00:37:07.920 --> 00:37:09.280 anything else. And we actually

NOTE Confidence: 0.97021705

00:37:09.280 --> 00:37:10.800 found across the entire brain,

NOTE Confidence: 0.97021705

00:37:10.800 --> 00:37:12.320 only four brain regions that

NOTE Confidence: 0.97021705

00:37:12.320 --> 00:37:13.760 were different in activation and

NOTE Confidence: 0.97021705

00:37:13.760 --> 00:37:15.840 experience versus novice meditators. And

NOTE Confidence: 0.97021705

00:37:15.840 --> 00:37:16.800 in fact, we at first,

NOTE Confidence: 0.97021705

00:37:16.800 --> 00:37:17.600 we thought this was a

NOTE Confidence: 0.97021705

00:37:17.600 --> 00:37:18.880 failed study because we were

NOTE Confidence: 0.97021705

00:37:18.880 --> 00:37:20.455 just, at first, just looked

NOTE Confidence: 0.97021705

00:37:20.455 --> 00:37:21.994 at increased activation

NOTE Confidence: 0.99882334

00:37:22.535 --> 00:37:23.335 in the brain. We didn't  
NOTE Confidence: 0.99882334

00:37:23.335 --> 00:37:24.635 find a single brain region  
NOTE Confidence: 0.9245637

00:37:24.935 --> 00:37:26.055 that was increasing activity. And  
NOTE Confidence: 0.9245637

00:37:26.055 --> 00:37:26.695 it was a kind of  
NOTE Confidence: 0.9245637

00:37:26.695 --> 00:37:27.455 a confound for me because  
NOTE Confidence: 0.9245637

00:37:27.455 --> 00:37:28.215 I'm like, boy, I feel  
NOTE Confidence: 0.9245637

00:37:28.215 --> 00:37:29.094 like I'm working hard when  
NOTE Confidence: 0.9245637

00:37:29.094 --> 00:37:29.755 I'm meditating.  
NOTE Confidence: 0.99167657

00:37:30.135 --> 00:37:31.255 At the time, I didn't  
NOTE Confidence: 0.99167657

00:37:31.255 --> 00:37:32.695 realize that that effort was  
NOTE Confidence: 0.99167657

00:37:32.695 --> 00:37:33.594 actually problematic.  
NOTE Confidence: 0.98590773

00:37:34.110 --> 00:37:34.910 But then we said, well,  
NOTE Confidence: 0.98590773

00:37:34.910 --> 00:37:35.710 what if we flip the  
NOTE Confidence: 0.98590773

00:37:35.710 --> 00:37:36.990 script and say, are there  
NOTE Confidence: 0.98590773

00:37:36.990 --> 00:37:38.370 changes in the deactivation,  
NOTE Confidence: 0.9506256

00:37:39.470 --> 00:37:40.510 side of things? And that's

NOTE Confidence: 0.9506256

00:37:40.510 --> 00:37:41.550 exactly what we found was

NOTE Confidence: 0.9506256

00:37:41.550 --> 00:37:43.710 experienced meditators were not activating

NOTE Confidence: 0.9506256

00:37:43.710 --> 00:37:45.310 their default mode network as

NOTE Confidence: 0.9506256

00:37:45.310 --> 00:37:46.350 much as novices were. And

NOTE Confidence: 0.9506256

00:37:46.350 --> 00:37:47.630 we found some differences in

NOTE Confidence: 0.9506256

00:37:47.630 --> 00:37:49.230 functional connectivity and other things

NOTE Confidence: 0.9506256

00:37:49.230 --> 00:37:50.114 as well. And we'll go

NOTE Confidence: 0.9506256

00:37:50.114 --> 00:37:51.475 into the details in in

NOTE Confidence: 0.9506256

00:37:51.475 --> 00:37:52.535 the interest of time,

NOTE Confidence: 0.95160776

00:37:52.835 --> 00:37:53.795 but that was it was

NOTE Confidence: 0.95160776

00:37:53.795 --> 00:37:55.235 a really interesting finding for

NOTE Confidence: 0.95160776

00:37:55.235 --> 00:37:56.435 us. We and it helped

NOTE Confidence: 0.95160776

00:37:56.435 --> 00:37:57.475 us kind of shape how

NOTE Confidence: 0.95160776

00:37:57.475 --> 00:37:58.775 we were thinking about

NOTE Confidence: 0.9491995

00:37:59.075 --> 00:38:00.695 what meditation and what mindfulness

NOTE Confidence: 0.9491995

00:38:00.835 --> 00:38:01.975 were actually about.  
NOTE Confidence: 0.97653556

00:38:02.589 --> 00:38:03.890 So this was a relatively  
NOTE Confidence: 0.97653556

00:38:03.950 --> 00:38:05.309 small study. It took us  
NOTE Confidence: 0.97653556

00:38:05.309 --> 00:38:06.849 several years to actually collect.  
NOTE Confidence: 0.9815256

00:38:07.469 --> 00:38:08.670 Back then, you could actually  
NOTE Confidence: 0.9815256

00:38:08.670 --> 00:38:10.270 publish with twelve subjects in  
NOTE Confidence: 0.9815256

00:38:10.270 --> 00:38:11.010 each group.  
NOTE Confidence: 0.95347726

00:38:12.430 --> 00:38:13.869 But so we said, well,  
NOTE Confidence: 0.95347726

00:38:13.869 --> 00:38:14.910 let's let's make sure we  
NOTE Confidence: 0.95347726

00:38:14.910 --> 00:38:15.975 replicate this first. And and  
NOTE Confidence: 0.95347726

00:38:15.975 --> 00:38:17.335 I was fortunate enough to  
NOTE Confidence: 0.95347726

00:38:17.335 --> 00:38:18.615 have now one of your,  
NOTE Confidence: 0.95347726

00:38:18.935 --> 00:38:20.935 faculty members, Katie Garrison, join  
NOTE Confidence: 0.95347726

00:38:20.935 --> 00:38:22.075 my lab at the time.  
NOTE Confidence: 0.95347726

00:38:22.295 --> 00:38:23.015 And I have to say  
NOTE Confidence: 0.95347726

00:38:23.015 --> 00:38:24.215 she's one of the most,

NOTE Confidence: 0.95347726

00:38:24.455 --> 00:38:26.215 productive, wonderful postdocs that I've

NOTE Confidence: 0.95347726

00:38:26.215 --> 00:38:27.895 ever had. And so she

NOTE Confidence: 0.95347726

00:38:27.895 --> 00:38:28.935 actually let us study where

NOTE Confidence: 0.95347726

00:38:28.935 --> 00:38:29.815 we did a replication,

NOTE Confidence: 0.96090174

00:38:30.910 --> 00:38:32.110 where we doubled the sample

NOTE Confidence: 0.96090174

00:38:32.110 --> 00:38:32.989 size. And you can see

NOTE Confidence: 0.96090174

00:38:32.989 --> 00:38:34.750 here, there's if you look

NOTE Confidence: 0.96090174

00:38:34.750 --> 00:38:36.690 at the posterior cingulate reticular

NOTE Confidence: 0.96090174

00:38:36.910 --> 00:38:37.410 oops.

NOTE Confidence: 0.9701417

00:38:38.430 --> 00:38:39.710 Supposed to be somewhere. Well,

NOTE Confidence: 0.9701417

00:38:39.710 --> 00:38:40.610 ignore that.

NOTE Confidence: 0.9440386

00:38:41.790 --> 00:38:43.810 I guess, hopefully, here, but

NOTE Confidence: 0.9440386

00:38:43.870 --> 00:38:44.830 maybe I got the time

NOTE Confidence: 0.9440386

00:38:44.830 --> 00:38:45.330 wrong.

NOTE Confidence: 0.98640954

00:38:46.625 --> 00:38:47.905 You can see that the

NOTE Confidence: 0.98640954

00:38:47.905 --> 00:38:49.744 posterior cingulate is showing that  
NOTE Confidence: 0.98640954

00:38:49.744 --> 00:38:51.105 replication. We're seeing other brain  
NOTE Confidence: 0.98640954

00:38:51.105 --> 00:38:51.984 regions. We won't go into  
NOTE Confidence: 0.98640954

00:38:51.984 --> 00:38:53.585 those now, because it's, you  
NOTE Confidence: 0.98640954

00:38:53.585 --> 00:38:54.464 know, it's it's a little  
NOTE Confidence: 0.98640954

00:38:54.464 --> 00:38:56.065 messier. It's hard to hard  
NOTE Confidence: 0.98640954

00:38:56.065 --> 00:38:57.125 to tell definitively,  
NOTE Confidence: 0.98383754

00:38:57.505 --> 00:38:58.385 but it seems like we  
NOTE Confidence: 0.98383754

00:38:58.385 --> 00:38:59.744 could actually replicate the results.  
NOTE Confidence: 0.98383754

00:38:59.744 --> 00:39:00.545 And that gave us enough,  
NOTE Confidence: 0.9582933

00:39:02.060 --> 00:39:03.420 it gave us enough confidence  
NOTE Confidence: 0.9582933

00:39:03.420 --> 00:39:04.380 to say, okay. Let's go  
NOTE Confidence: 0.9582933

00:39:04.380 --> 00:39:05.340 to the NIH and and  
NOTE Confidence: 0.9582933

00:39:05.340 --> 00:39:06.140 try to get some funding  
NOTE Confidence: 0.9582933

00:39:06.140 --> 00:39:07.180 to do a randomized controlled  
NOTE Confidence: 0.9582933

00:39:07.180 --> 00:39:08.780 trial, not just in experienced

NOTE Confidence: 0.9582933

00:39:08.780 --> 00:39:10.460 meditators, but in people who've

NOTE Confidence: 0.9582933

00:39:10.460 --> 00:39:11.840 never meditated before.

NOTE Confidence: 0.99805665

00:39:12.300 --> 00:39:13.359 So in collaboration

NOTE Confidence: 0.95752084

00:39:13.900 --> 00:39:15.500 with Amy Janes, who had

NOTE Confidence: 0.95752084

00:39:15.500 --> 00:39:17.315 this wonderful smoking cue reactivity

NOTE Confidence: 0.95752084

00:39:17.455 --> 00:39:18.494 paradigm, she was at Harvard

NOTE Confidence: 0.95752084

00:39:18.494 --> 00:39:19.375 at the time, she's now

NOTE Confidence: 0.95752084

00:39:19.375 --> 00:39:20.035 at NIMH,

NOTE Confidence: 0.9551085

00:39:21.055 --> 00:39:21.935 we brought people in who

NOTE Confidence: 0.9551085

00:39:21.935 --> 00:39:23.375 wanted to quit smoking, and

NOTE Confidence: 0.9551085

00:39:23.375 --> 00:39:24.655 we asked you know, we

NOTE Confidence: 0.9551085

00:39:24.655 --> 00:39:25.955 scanned their brains at baseline

NOTE Confidence: 0.9551085

00:39:26.015 --> 00:39:27.375 to see how active their

NOTE Confidence: 0.9551085

00:39:27.375 --> 00:39:28.815 posterior cingulate was, as well

NOTE Confidence: 0.9551085

00:39:28.815 --> 00:39:29.695 as the rest of their

NOTE Confidence: 0.9551085

00:39:29.695 --> 00:39:30.810 brain. But we our region  
NOTE Confidence: 0.9551085

00:39:30.810 --> 00:39:32.050 of interest was the posterior  
NOTE Confidence: 0.9551085

00:39:32.050 --> 00:39:33.650 cingulate. Then we randomized them  
NOTE Confidence: 0.9551085

00:39:33.650 --> 00:39:34.930 to get mindfulness training or  
NOTE Confidence: 0.9551085

00:39:34.930 --> 00:39:36.609 the National Cancer Institute's quick  
NOTE Confidence: 0.9551085

00:39:36.609 --> 00:39:37.810 guide app. A month later,  
NOTE Confidence: 0.9551085

00:39:37.810 --> 00:39:38.950 we scanned them again,  
NOTE Confidence: 0.9914326

00:39:39.489 --> 00:39:40.770 to see if changes in  
NOTE Confidence: 0.9914326

00:39:40.770 --> 00:39:42.390 brain activity predicted outcomes.  
NOTE Confidence: 0.93394816

00:39:43.085 --> 00:39:44.045 Now just for those of  
NOTE Confidence: 0.93394816

00:39:44.045 --> 00:39:45.344 you earlier in your careers,  
NOTE Confidence: 0.99070376

00:39:45.724 --> 00:39:46.944 you know, this this constitutes,  
NOTE Confidence: 0.99070376

00:39:47.164 --> 00:39:48.844 you know, years of trying  
NOTE Confidence: 0.99070376

00:39:48.844 --> 00:39:50.125 to get funding, years of  
NOTE Confidence: 0.99070376

00:39:50.125 --> 00:39:52.045 doing studies, etcetera, etcetera, and  
NOTE Confidence: 0.99070376

00:39:52.045 --> 00:39:53.325 it all culminates in one

NOTE Confidence: 0.99070376

00:39:53.325 --> 00:39:54.785 slide. So here it is,

NOTE Confidence: 0.99070376

00:39:54.924 --> 00:39:56.520 the the, you know, multimillion

NOTE Confidence: 0.99070376

00:39:56.660 --> 00:39:58.340 dollar slide, where we actually

NOTE Confidence: 0.99070376

00:39:58.340 --> 00:40:00.180 found that reductions in posterior

NOTE Confidence: 0.99070376

00:40:00.180 --> 00:40:01.560 cingulate cortex activity

NOTE Confidence: 0.9980438

00:40:02.100 --> 00:40:03.320 predicted or correlated

NOTE Confidence: 0.9900308

00:40:03.620 --> 00:40:05.380 with reductions in cigarette smoking.

NOTE Confidence: 0.9900308

00:40:05.380 --> 00:40:06.100 And you can see that

NOTE Confidence: 0.9900308

00:40:06.100 --> 00:40:07.480 that was actually specific

NOTE Confidence: 0.9470388

00:40:07.925 --> 00:40:09.765 to mindfulness training. So people

NOTE Confidence: 0.9470388

00:40:09.765 --> 00:40:11.045 that got mindfulness training, they

NOTE Confidence: 0.9470388

00:40:11.045 --> 00:40:12.565 showed a correlation of point

NOTE Confidence: 0.9470388

00:40:12.565 --> 00:40:13.525 three nine, whereas there was

NOTE Confidence: 0.9470388

00:40:13.525 --> 00:40:14.185 no correlation

NOTE Confidence: 0.9903912

00:40:14.805 --> 00:40:16.984 in the, cognitive therapy group.

NOTE Confidence: 0.9903912

00:40:17.125 --> 00:40:18.805 And the we as a  
NOTE Confidence: 0.9903912

00:40:18.805 --> 00:40:20.405 surrogate of a dose response,  
NOTE Confidence: 0.9903912

00:40:20.405 --> 00:40:21.364 we actually found that the  
NOTE Confidence: 0.9903912

00:40:21.364 --> 00:40:22.565 number of modules that people  
NOTE Confidence: 0.9903912

00:40:22.565 --> 00:40:23.065 completed  
NOTE Confidence: 0.99846333

00:40:23.739 --> 00:40:25.200 also predicted reductions  
NOTE Confidence: 0.9854979

00:40:25.900 --> 00:40:26.219 in,  
NOTE Confidence: 0.9748353

00:40:26.780 --> 00:40:27.520 in activity.  
NOTE Confidence: 0.948345

00:40:27.980 --> 00:40:29.520 Now this is in contrast  
NOTE Confidence: 0.95486265

00:40:30.300 --> 00:40:31.900 to people completed about the  
NOTE Confidence: 0.95486265

00:40:31.900 --> 00:40:33.020 same number of modules in  
NOTE Confidence: 0.95486265

00:40:33.020 --> 00:40:35.020 the National Cancer Institute's app,  
NOTE Confidence: 0.95486265

00:40:35.020 --> 00:40:36.285 but we didn't see that  
NOTE Confidence: 0.95486265

00:40:36.525 --> 00:40:38.285 prediction based on that. So  
NOTE Confidence: 0.95486265

00:40:38.285 --> 00:40:39.565 that was an interesting finding  
NOTE Confidence: 0.95486265

00:40:39.565 --> 00:40:40.525 and was kind of the,

NOTE Confidence: 0.95486265

00:40:40.525 --> 00:40:42.145 you know, the culmination where,

NOTE Confidence: 0.95486265

00:40:42.204 --> 00:40:43.164 you know, we're we're seeing

NOTE Confidence: 0.95486265

00:40:43.164 --> 00:40:44.765 theory, like mindfulness training supposed

NOTE Confidence: 0.95486265

00:40:44.765 --> 00:40:45.645 to help people be with

NOTE Confidence: 0.95486265

00:40:45.645 --> 00:40:46.605 a craving and not get

NOTE Confidence: 0.95486265

00:40:46.605 --> 00:40:47.645 caught up in it. We're

NOTE Confidence: 0.95486265

00:40:47.645 --> 00:40:48.765 lining that up with neural

NOTE Confidence: 0.95486265

00:40:48.765 --> 00:40:49.265 mechanism

NOTE Confidence: 0.9820636

00:40:49.724 --> 00:40:50.844 where, you know, here's a

NOTE Confidence: 0.9820636

00:40:50.844 --> 00:40:53.090 brain network that's that's activated

NOTE Confidence: 0.9820636

00:40:53.090 --> 00:40:53.890 when people are caught up

NOTE Confidence: 0.9820636

00:40:53.890 --> 00:40:55.170 in their experience. And then

NOTE Confidence: 0.9820636

00:40:55.170 --> 00:40:57.110 this predicts clinical outcomes, which

NOTE Confidence: 0.92410344

00:40:57.410 --> 00:40:59.270 goes back to Bruce Ransville's

NOTE Confidence: 0.92410344

00:40:59.410 --> 00:41:00.710 so what question. Right?

NOTE Confidence: 0.9790249

00:41:01.010 --> 00:41:02.610 Who cares unless it actually,  
NOTE Confidence: 0.9790249

00:41:02.850 --> 00:41:04.450 directly aligns with clinical outcomes?  
NOTE Confidence: 0.9790249

00:41:04.450 --> 00:41:05.410 And so this was this  
NOTE Confidence: 0.9790249

00:41:05.410 --> 00:41:06.290 was nice to see that  
NOTE Confidence: 0.9790249

00:41:06.290 --> 00:41:07.305 they were lining up.  
NOTE Confidence: 0.99540865

00:41:07.864 --> 00:41:09.145 So around that time that  
NOTE Confidence: 0.99540865

00:41:09.145 --> 00:41:10.344 we were doing some of  
NOTE Confidence: 0.99540865

00:41:10.344 --> 00:41:11.645 these replication studies,  
NOTE Confidence: 0.8581249

00:41:12.905 --> 00:41:14.204 that I was working,  
NOTE Confidence: 0.5500884

00:41:15.224 --> 00:41:16.125 Zenios Papadimitris  
NOTE Confidence: 0.9190713

00:41:16.585 --> 00:41:17.785 and, he at the time,  
NOTE Confidence: 0.9190713

00:41:17.785 --> 00:41:19.065 his graduate student, who's now,  
NOTE Confidence: 0.9190713

00:41:19.065 --> 00:41:20.265 I think, an associate professor  
NOTE Confidence: 0.9190713

00:41:20.265 --> 00:41:21.325 here, Dustin Shinos,  
NOTE Confidence: 0.97334284

00:41:21.760 --> 00:41:23.780 were playing with these, gaming  
NOTE Confidence: 0.97334284

00:41:24.000 --> 00:41:25.760 chips, these, these I don't

NOTE Confidence: 0.97334284

00:41:25.760 --> 00:41:26.880 know what maybe they're even

NOTE Confidence: 0.97334284

00:41:27.120 --> 00:41:28.080 I don't know remember what

NOTE Confidence: 0.97334284

00:41:28.080 --> 00:41:28.880 chips they were, but they

NOTE Confidence: 0.97334284

00:41:28.880 --> 00:41:30.239 were there were some computer

NOTE Confidence: 0.97334284

00:41:30.239 --> 00:41:30.960 chips that they were saying,

NOTE Confidence: 0.97334284

00:41:30.960 --> 00:41:31.840 hey. Can we use this

NOTE Confidence: 0.97334284

00:41:31.840 --> 00:41:33.860 to increase processing speed

NOTE Confidence: 0.99396986

00:41:34.164 --> 00:41:35.525 in fMRI analysis? And so

NOTE Confidence: 0.99396986

00:41:35.525 --> 00:41:36.565 they developed some of the

NOTE Confidence: 0.99396986

00:41:36.565 --> 00:41:38.424 first real time neurofeedback paradigms,

NOTE Confidence: 0.98617613

00:41:39.125 --> 00:41:40.085 right here at Yale. And

NOTE Confidence: 0.98617613

00:41:40.085 --> 00:41:41.045 we said, hey, can we

NOTE Confidence: 0.98617613

00:41:41.045 --> 00:41:42.805 actually use that to line

NOTE Confidence: 0.98617613

00:41:42.805 --> 00:41:44.265 up people's brain activity

NOTE Confidence: 0.9756054

00:41:44.964 --> 00:41:47.125 with their, subjective experience? Because

NOTE Confidence: 0.9756054

00:41:47.125 --> 00:41:48.404 we wanted to be very  
NOTE Confidence: 0.9756054

00:41:48.404 --> 00:41:49.944 careful about the reverse inference  
NOTE Confidence: 0.9756054

00:41:50.030 --> 00:41:51.070 problem, which is  
NOTE Confidence: 0.9464704

00:41:52.030 --> 00:41:52.910 was huge then and is  
NOTE Confidence: 0.9464704

00:41:52.910 --> 00:41:54.030 still huge now where you  
NOTE Confidence: 0.9464704

00:41:54.030 --> 00:41:55.310 say, oh, this brain region's  
NOTE Confidence: 0.9464704

00:41:55.310 --> 00:41:57.150 deactivated and reactivating, and therefore,  
NOTE Confidence: 0.9464704

00:41:57.150 --> 00:41:58.190 this must be happening in  
NOTE Confidence: 0.9464704

00:41:58.190 --> 00:42:00.030 somebody's experience. Well, you've gotta  
NOTE Confidence: 0.9464704

00:42:00.030 --> 00:42:01.150 check their experience to see  
NOTE Confidence: 0.9464704

00:42:01.150 --> 00:42:02.030 if the two line up.  
NOTE Confidence: 0.9464704

00:42:02.030 --> 00:42:03.390 I'm not gonna go into  
NOTE Confidence: 0.9464704

00:42:03.390 --> 00:42:05.085 the the details we published.  
NOTE Confidence: 0.9464704

00:42:05.085 --> 00:42:05.965 This is, again, a lot  
NOTE Confidence: 0.9464704

00:42:05.965 --> 00:42:07.325 of work that Katie Garrison  
NOTE Confidence: 0.9464704

00:42:07.325 --> 00:42:08.465 did and led,

NOTE Confidence: 0.9993056  
00:42:09.085 --> 00:42:10.045 but I'll just show  
NOTE Confidence: 0.9993056  
00:42:10.045 --> 00:42:10.864 you the paradigm  
NOTE Confidence: 0.984946  
00:42:11.245 --> 00:42:12.525 and then, you know, some  
NOTE Confidence: 0.984946  
00:42:12.525 --> 00:42:14.045 some nuggets. And if you're  
NOTE Confidence: 0.984946  
00:42:14.045 --> 00:42:15.005 interested, I can send you  
NOTE Confidence: 0.984946  
00:42:15.005 --> 00:42:15.885 some of the papers. But,  
NOTE Confidence: 0.984946  
00:42:15.885 --> 00:42:16.385 basically,  
NOTE Confidence: 0.98873883  
00:42:16.685 --> 00:42:17.985 we could have people meditate  
NOTE Confidence: 0.97953  
00:42:18.339 --> 00:42:19.700 while they're giving them feedback  
NOTE Confidence: 0.97953  
00:42:19.700 --> 00:42:21.640 from their, their posterior singlet.  
NOTE Confidence: 0.97953  
00:42:21.700 --> 00:42:22.420 And in fact, we had  
NOTE Confidence: 0.97953  
00:42:22.420 --> 00:42:23.619 to work out a paradigm  
NOTE Confidence: 0.97953  
00:42:23.619 --> 00:42:24.839 for a long time to  
NOTE Confidence: 0.97953  
00:42:24.900 --> 00:42:26.739 to minimize the interference that  
NOTE Confidence: 0.97953  
00:42:26.739 --> 00:42:28.180 that would have with their,  
NOTE Confidence: 0.97953

00:42:28.420 --> 00:42:29.960 with collecting the data because,  
NOTE Confidence: 0.97953

00:42:30.020 --> 00:42:31.219 you know, rarely does anybody  
NOTE Confidence: 0.97953

00:42:31.219 --> 00:42:32.260 get to meditate while they  
NOTE Confidence: 0.97953

00:42:32.260 --> 00:42:33.864 watch their brain activity change.  
NOTE Confidence: 0.97953

00:42:33.864 --> 00:42:34.825 And so that could actually  
NOTE Confidence: 0.97953

00:42:34.825 --> 00:42:35.704 be, you know, get be  
NOTE Confidence: 0.97953

00:42:35.704 --> 00:42:36.765 exciting in itself.  
NOTE Confidence: 0.94132036

00:42:38.265 --> 00:42:39.464 I'll and we actually,  
NOTE Confidence: 0.9835207

00:42:40.025 --> 00:42:41.724 replicated some of our findings,  
NOTE Confidence: 0.9725023

00:42:42.184 --> 00:42:43.384 in with EEG. I'll show  
NOTE Confidence: 0.9725023

00:42:43.384 --> 00:42:44.744 you, actually, what this looks  
NOTE Confidence: 0.9725023

00:42:44.744 --> 00:42:45.785 like. We were fortunate enough  
NOTE Confidence: 0.9725023

00:42:45.785 --> 00:42:46.869 to have Anderson Cooper come  
NOTE Confidence: 0.9725023

00:42:46.869 --> 00:42:47.750 in and try this out,  
NOTE Confidence: 0.9725023

00:42:47.989 --> 00:42:48.790 for a piece he did  
NOTE Confidence: 0.9725023

00:42:48.790 --> 00:42:49.690 on sixty minutes.

NOTE Confidence: 0.999571  
00:42:50.070 --> 00:42:51.030 This is just the next  
NOTE Confidence: 0.999571  
00:42:51.030 --> 00:42:52.950 generation of exercise. We've got  
NOTE Confidence: 0.999571  
00:42:52.950 --> 00:42:53.690 the physical,  
NOTE Confidence: 0.9919163  
00:42:53.989 --> 00:42:55.369 you know, exercise components,  
NOTE Confidence: 0.9763083  
00:42:55.989 --> 00:42:57.349 down, and now it's about  
NOTE Confidence: 0.9763083  
00:42:57.349 --> 00:42:58.390 working out how can we  
NOTE Confidence: 0.9763083  
00:42:58.390 --> 00:43:00.305 actually train our minds. Doctor  
NOTE Confidence: 0.9763083  
00:43:00.305 --> 00:43:01.825 Brewer is trying to understand  
NOTE Confidence: 0.9763083  
00:43:01.825 --> 00:43:03.585 how mindfulness can alter the  
NOTE Confidence: 0.9763083  
00:43:03.585 --> 00:43:04.805 functioning of the brain.  
NOTE Confidence: 0.99619776  
00:43:05.345 --> 00:43:06.625 He uses a cap lined  
NOTE Confidence: 0.99619776  
00:43:06.625 --> 00:43:07.665 with a hundred and twenty  
NOTE Confidence: 0.99619776  
00:43:07.665 --> 00:43:08.405 eight electrodes.  
NOTE Confidence: 0.9977389  
00:43:09.025 --> 00:43:10.625 We're gonna start filling each  
NOTE Confidence: 0.9977389  
00:43:10.625 --> 00:43:11.985 of these hundred and twenty  
NOTE Confidence: 0.9977389

00:43:11.985 --> 00:43:14.160 eight wells with conduction gel.  
NOTE Confidence: 0.9940985

00:43:14.480 --> 00:43:15.599 The electrodes are able to  
NOTE Confidence: 0.9940985

00:43:15.599 --> 00:43:16.719 pick up signals from the  
NOTE Confidence: 0.9940985

00:43:16.719 --> 00:43:17.859 posterior cingulate,  
NOTE Confidence: 0.9971489

00:43:18.160 --> 00:43:19.460 part of a brain network  
NOTE Confidence: 0.9971489

00:43:19.520 --> 00:43:21.140 linked to memory and emotion.  
NOTE Confidence: 0.99649096

00:43:21.520 --> 00:43:23.119 This is all just picking  
NOTE Confidence: 0.99649096

00:43:23.119 --> 00:43:24.559 up electrical signal from the  
NOTE Confidence: 0.99649096

00:43:24.559 --> 00:43:25.780 top of your head.  
NOTE Confidence: 0.98036784

00:43:26.239 --> 00:43:28.125 Since attending the mindfulness retreat,  
NOTE Confidence: 0.98036784

00:43:28.125 --> 00:43:29.725 I've been meditating daily and  
NOTE Confidence: 0.98036784

00:43:29.725 --> 00:43:30.844 was curious to see if  
NOTE Confidence: 0.98036784

00:43:30.844 --> 00:43:31.805 it had an impact on  
NOTE Confidence: 0.98036784

00:43:31.805 --> 00:43:32.465 my brain.  
NOTE Confidence: 0.9963478

00:43:32.765 --> 00:43:34.125 We're gonna have you start  
NOTE Confidence: 0.9963478

00:43:34.125 --> 00:43:36.385 with thinking of something that

NOTE Confidence: 0.9963478

00:43:36.445 --> 00:43:38.205 was very anxiety provoking for

NOTE Confidence: 0.9963478

00:43:38.205 --> 00:43:39.330 you. Okay.

NOTE Confidence: 0.98386914

00:43:39.650 --> 00:43:40.930 When I thought about something

NOTE Confidence: 0.98386914

00:43:40.930 --> 00:43:42.370 stressful, the cells in my

NOTE Confidence: 0.98386914

00:43:42.370 --> 00:43:45.090 brain's posterior cingulate immediately started

NOTE Confidence: 0.98386914

00:43:45.090 --> 00:43:46.610 firing, shown by the red

NOTE Confidence: 0.98386914

00:43:46.610 --> 00:43:47.570 lines that went off the

NOTE Confidence: 0.98386914

00:43:47.570 --> 00:43:49.110 chart on the computer screen.

NOTE Confidence: 0.9474537

00:43:49.489 --> 00:43:50.870 Just drop into meditation.

NOTE Confidence: 0.97954446

00:43:51.170 --> 00:43:52.674 Okay. When I let go

NOTE Confidence: 0.97954446

00:43:52.674 --> 00:43:54.114 of those stressful thoughts and

NOTE Confidence: 0.97954446

00:43:54.114 --> 00:43:56.035 refocused on my breath, within

NOTE Confidence: 0.97954446

00:43:56.035 --> 00:43:57.474 seconds, the brain cells that

NOTE Confidence: 0.97954446

00:43:57.474 --> 00:43:59.415 had been firing quieted down,

NOTE Confidence: 0.97954446

00:43:59.555 --> 00:44:00.674 shown by the blue lines

NOTE Confidence: 0.97954446

00:44:00.674 --> 00:44:01.494 on the computer.  
NOTE Confidence: 0.9722639

00:44:01.795 --> 00:44:03.075 That's really fascinating to see  
NOTE Confidence: 0.9722639

00:44:03.075 --> 00:44:03.815 like that.  
NOTE Confidence: 0.9855025

00:44:04.200 --> 00:44:06.040 Doctor Brewer believes everyone can  
NOTE Confidence: 0.9855025

00:44:06.040 --> 00:44:07.560 train their brains to reach  
NOTE Confidence: 0.9855025

00:44:07.560 --> 00:44:09.560 that blue mindfulness zone, but  
NOTE Confidence: 0.9855025

00:44:09.560 --> 00:44:10.940 he says all the technology  
NOTE Confidence: 0.9855025

00:44:11.160 --> 00:44:12.680 we're surrounded by makes it  
NOTE Confidence: 0.9855025

00:44:12.680 --> 00:44:13.180 difficult.  
NOTE Confidence: 0.96688014

00:44:14.920 --> 00:44:16.619 So I wanna skip ahead  
NOTE Confidence: 0.96688014

00:44:16.839 --> 00:44:17.160 and  
NOTE Confidence: 0.8650331

00:44:17.855 --> 00:44:19.614 you know, so some interesting  
NOTE Confidence: 0.8650331

00:44:19.614 --> 00:44:20.835 findings from neuroimaging.  
NOTE Confidence: 0.5933969

00:44:21.375 --> 00:44:21.535 We'd  
NOTE Confidence: 0.7909024

00:44:22.414 --> 00:44:23.315 it it was actually,  
NOTE Confidence: 0.9779892

00:44:24.094 --> 00:44:25.295 some of the some of

NOTE Confidence: 0.9779892

00:44:25.295 --> 00:44:26.914 the work here at Yale

NOTE Confidence: 0.9779892

00:44:27.055 --> 00:44:28.255 where we were exploring, could

NOTE Confidence: 0.9779892

00:44:28.255 --> 00:44:29.375 you actually turn this into

NOTE Confidence: 0.9779892

00:44:29.375 --> 00:44:30.594 a neurofeedback device?

NOTE Confidence: 0.9881443

00:44:31.370 --> 00:44:33.650 The hardware actually wasn't nearly

NOTE Confidence: 0.9881443

00:44:33.650 --> 00:44:35.050 in place to be able

NOTE Confidence: 0.9881443

00:44:35.050 --> 00:44:36.090 to do that from a

NOTE Confidence: 0.9881443

00:44:36.090 --> 00:44:36.590 scalability

NOTE Confidence: 0.963544

00:44:37.130 --> 00:44:38.730 perspective. So I I think

NOTE Confidence: 0.963544

00:44:38.730 --> 00:44:40.330 people are still exploring those

NOTE Confidence: 0.963544

00:44:40.330 --> 00:44:41.690 types of things. And, you

NOTE Confidence: 0.963544

00:44:41.690 --> 00:44:43.050 know, it goes back to

NOTE Confidence: 0.963544

00:44:43.050 --> 00:44:44.090 mechanism. If we can find

NOTE Confidence: 0.963544

00:44:44.090 --> 00:44:45.370 some of these neural mechanisms,

NOTE Confidence: 0.963544

00:44:45.370 --> 00:44:46.734 line them up, how can

NOTE Confidence: 0.963544

00:44:46.734 --> 00:44:48.255 we actually use these for  
NOTE Confidence: 0.963544

00:44:48.255 --> 00:44:49.695 for clinical use? So that's  
NOTE Confidence: 0.963544

00:44:49.695 --> 00:44:51.375 still an open question, that  
NOTE Confidence: 0.963544

00:44:51.375 --> 00:44:52.494 that we and others are  
NOTE Confidence: 0.963544

00:44:52.494 --> 00:44:53.775 exploring. But I just wanna  
NOTE Confidence: 0.963544

00:44:53.775 --> 00:44:54.494 end, because I I know  
NOTE Confidence: 0.963544

00:44:54.494 --> 00:44:55.614 that we're getting short on  
NOTE Confidence: 0.963544

00:44:55.614 --> 00:44:57.375 time, with some something that's  
NOTE Confidence: 0.963544

00:44:57.375 --> 00:44:58.974 actually clinically useful that we  
NOTE Confidence: 0.963544

00:44:58.974 --> 00:45:00.255 all can take home and  
NOTE Confidence: 0.963544

00:45:00.255 --> 00:45:01.535 even play with if it's  
NOTE Confidence: 0.963544

00:45:01.535 --> 00:45:02.550 if it's helpful in our  
NOTE Confidence: 0.963544

00:45:02.550 --> 00:45:04.630 clinical practice. So over the  
NOTE Confidence: 0.963544

00:45:04.630 --> 00:45:05.130 years,  
NOTE Confidence: 0.9543054

00:45:05.430 --> 00:45:06.550 we've been doing you know,  
NOTE Confidence: 0.9543054

00:45:06.550 --> 00:45:07.989 we've been collecting some data,

NOTE Confidence: 0.9543054

00:45:07.989 --> 00:45:08.710 and I had a great

NOTE Confidence: 0.9543054

00:45:08.710 --> 00:45:10.950 graduate student, Ariel Bechia, who

NOTE Confidence: 0.9543054

00:45:10.950 --> 00:45:12.730 was a qualitative researcher.

NOTE Confidence: 0.99226075

00:45:13.190 --> 00:45:14.390 And so we started doing

NOTE Confidence: 0.99226075

00:45:14.390 --> 00:45:15.750 interviews and and checking to

NOTE Confidence: 0.99226075

00:45:15.750 --> 00:45:16.575 see if there was a

NOTE Confidence: 0.99226075

00:45:16.575 --> 00:45:17.935 stepwise process that people were

NOTE Confidence: 0.99226075

00:45:17.935 --> 00:45:19.474 following as they were changing,

NOTE Confidence: 0.9947631

00:45:19.935 --> 00:45:21.315 some of their habitual behaviors.

NOTE Confidence: 0.9800855

00:45:21.695 --> 00:45:23.454 And I'll just lay out

NOTE Confidence: 0.9800855

00:45:23.454 --> 00:45:24.415 what we found and then

NOTE Confidence: 0.9800855

00:45:24.415 --> 00:45:25.954 go through some examples quickly.

NOTE Confidence: 0.9800855

00:45:26.175 --> 00:45:27.135 So it seems to be

NOTE Confidence: 0.9800855

00:45:27.135 --> 00:45:28.094 a a three step process.

NOTE Confidence: 0.9800855

00:45:28.094 --> 00:45:29.135 I don't know why lots

NOTE Confidence: 0.9800855

00:45:29.135 --> 00:45:30.415 of things fall into threes.  
NOTE Confidence: 0.9800855

00:45:30.415 --> 00:45:31.775 This one happens too.  
NOTE Confidence: 0.9348143

00:45:32.680 --> 00:45:34.600 Probably a coincidence, but interesting  
NOTE Confidence: 0.9348143

00:45:34.600 --> 00:45:35.100 nonetheless.  
NOTE Confidence: 0.91894966

00:45:36.280 --> 00:45:37.000 So first we have to  
NOTE Confidence: 0.91894966

00:45:37.000 --> 00:45:38.200 be aware of being caught  
NOTE Confidence: 0.91894966

00:45:38.200 --> 00:45:39.000 up in a habit loop  
NOTE Confidence: 0.91894966

00:45:39.000 --> 00:45:39.960 that none we have to  
NOTE Confidence: 0.91894966

00:45:39.960 --> 00:45:40.460 explore  
NOTE Confidence: 0.990723

00:45:40.760 --> 00:45:41.880 how rewarding it is, which  
NOTE Confidence: 0.990723

00:45:41.880 --> 00:45:43.580 is actually critical and counterintuitive.  
NOTE Confidence: 0.96470106

00:45:44.694 --> 00:45:45.655 And then we can use  
NOTE Confidence: 0.96470106

00:45:45.655 --> 00:45:47.414 practices to, step out of  
NOTE Confidence: 0.96470106

00:45:47.414 --> 00:45:49.094 these habit loops. So what  
NOTE Confidence: 0.96470106

00:45:49.094 --> 00:45:50.295 does this look like? Here's  
NOTE Confidence: 0.96470106

00:45:50.295 --> 00:45:52.295 an example from somebody, who's

NOTE Confidence: 0.96470106

00:45:52.295 --> 00:45:53.815 struggling with eating said, I

NOTE Confidence: 0.96470106

00:45:53.815 --> 00:45:54.694 understand why I go to

NOTE Confidence: 0.96470106

00:45:54.694 --> 00:45:55.734 food to avoid or cover

NOTE Confidence: 0.96470106

00:45:55.734 --> 00:45:57.035 up or distract from uncomfortable

NOTE Confidence: 0.96470106

00:45:57.094 --> 00:45:58.535 feelings, such as anger, sadness,

NOTE Confidence: 0.96470106

00:45:58.535 --> 00:45:59.734 or restlessness. Who wants to

NOTE Confidence: 0.96470106

00:45:59.734 --> 00:46:01.890 feel those things? Trigger, uncomfortable

NOTE Confidence: 0.96470106

00:46:01.950 --> 00:46:03.469 feeling. Behavior, eat something that

NOTE Confidence: 0.96470106

00:46:03.469 --> 00:46:05.810 temporarily diminishes the feeling. Rewards,

NOTE Confidence: 0.96470106

00:46:05.870 --> 00:46:06.750 still have to deal with

NOTE Confidence: 0.96470106

00:46:06.750 --> 00:46:08.030 the unpleasant feelings plus the

NOTE Confidence: 0.96470106

00:46:08.030 --> 00:46:09.630 sugar headache. I can clearly

NOTE Confidence: 0.96470106

00:46:09.630 --> 00:46:10.350 see how I got caught

NOTE Confidence: 0.96470106

00:46:10.350 --> 00:46:11.310 in this habit loop trying

NOTE Confidence: 0.96470106

00:46:11.310 --> 00:46:12.590 to escape difficult feelings with

NOTE Confidence: 0.96470106

00:46:12.590 --> 00:46:14.190 food, but that ultimately it  
NOTE Confidence: 0.96470106

00:46:14.190 --> 00:46:15.825 doesn't work. So I wanna  
NOTE Confidence: 0.96470106

00:46:15.825 --> 00:46:17.025 highlight this because this takes  
NOTE Confidence: 0.96470106

00:46:17.185 --> 00:46:19.125 literally takes thirty seconds to  
NOTE Confidence: 0.8993982

00:46:19.425 --> 00:46:20.885 just do some psychoeducation.  
NOTE Confidence: 0.9625086

00:46:21.425 --> 00:46:22.385 Hey. This is this is  
NOTE Confidence: 0.9625086

00:46:22.385 --> 00:46:24.065 how habits form. And then  
NOTE Confidence: 0.9625086

00:46:24.065 --> 00:46:25.585 send patients home to start  
NOTE Confidence: 0.9625086

00:46:25.585 --> 00:46:26.785 mapping out their habit loops.  
NOTE Confidence: 0.9625086

00:46:26.785 --> 00:46:27.585 And that's what I've been  
NOTE Confidence: 0.9625086

00:46:27.585 --> 00:46:29.425 doing, for years now, which  
NOTE Confidence: 0.9625086

00:46:29.425 --> 00:46:30.839 is, you know, listening as  
NOTE Confidence: 0.9625086

00:46:30.839 --> 00:46:32.200 I take a history to  
NOTE Confidence: 0.9625086

00:46:32.200 --> 00:46:33.400 see, you know, what habitual  
NOTE Confidence: 0.9625086

00:46:33.400 --> 00:46:34.759 pay behaviors are people caught  
NOTE Confidence: 0.9625086

00:46:34.759 --> 00:46:35.880 in, and are these important

NOTE Confidence: 0.9625086

00:46:35.880 --> 00:46:37.239 enough? You know, are these

NOTE Confidence: 0.9625086

00:46:37.239 --> 00:46:38.519 problems that they wanna that

NOTE Confidence: 0.9625086

00:46:38.519 --> 00:46:39.579 they wanna change?

NOTE Confidence: 0.96572036

00:46:40.839 --> 00:46:42.279 For example, my patient who

NOTE Confidence: 0.96572036

00:46:42.279 --> 00:46:43.400 was referred to me for

NOTE Confidence: 0.96572036

00:46:43.400 --> 00:46:43.900 anxiety,

NOTE Confidence: 0.94780165

00:46:44.295 --> 00:46:45.494 I pulled out a sticky

NOTE Confidence: 0.94780165

00:46:45.494 --> 00:46:47.515 note. She actually sent me

NOTE Confidence: 0.94780165

00:46:47.734 --> 00:46:48.855 a picture of it so

NOTE Confidence: 0.94780165

00:46:48.855 --> 00:46:49.815 that he kept it over

NOTE Confidence: 0.94780165

00:46:49.815 --> 00:46:51.015 the years. I don't think

NOTE Confidence: 0.94780165

00:46:51.015 --> 00:46:51.655 I have it in this

NOTE Confidence: 0.94780165

00:46:51.655 --> 00:46:52.855 presentation, but it was literally

NOTE Confidence: 0.94780165

00:46:52.934 --> 00:46:54.055 you can't read my handwriting

NOTE Confidence: 0.94780165

00:46:54.055 --> 00:46:55.255 anyway, but, you know, the

NOTE Confidence: 0.94780165

00:46:55.255 --> 00:46:56.614 trigger behavior result. And we  
NOTE Confidence: 0.94780165

00:46:56.614 --> 00:46:57.895 went through that, and I  
NOTE Confidence: 0.94780165

00:46:57.895 --> 00:46:59.200 sent him home and said,  
NOTE Confidence: 0.94780165

00:46:59.200 --> 00:47:00.320 hey. Just start mapping out  
NOTE Confidence: 0.94780165

00:47:00.320 --> 00:47:01.600 your anxiety habit loops. And  
NOTE Confidence: 0.94780165

00:47:01.600 --> 00:47:02.560 we set a follow-up for  
NOTE Confidence: 0.94780165

00:47:02.560 --> 00:47:03.840 two weeks later. So it  
NOTE Confidence: 0.94780165

00:47:03.840 --> 00:47:05.120 doesn't take long, but the  
NOTE Confidence: 0.94780165

00:47:05.120 --> 00:47:06.900 psychoeducation piece can really  
NOTE Confidence: 0.9362092

00:47:07.440 --> 00:47:09.600 possibly be helpful. So I  
NOTE Confidence: 0.9362092

00:47:09.600 --> 00:47:10.560 think that the next step  
NOTE Confidence: 0.9362092

00:47:10.560 --> 00:47:11.360 is the beginning of the  
NOTE Confidence: 0.9362092

00:47:11.360 --> 00:47:11.860 end,  
NOTE Confidence: 0.97304344

00:47:12.160 --> 00:47:13.440 because once we get into  
NOTE Confidence: 0.97304344

00:47:13.440 --> 00:47:14.400 this step, we can't go  
NOTE Confidence: 0.97304344

00:47:14.400 --> 00:47:15.705 back. And so many of

NOTE Confidence: 0.97304344

00:47:15.705 --> 00:47:16.585 you may be familiar with

NOTE Confidence: 0.97304344

00:47:16.585 --> 00:47:17.945 the orbital frontal cortex. I

NOTE Confidence: 0.97304344

00:47:17.945 --> 00:47:18.985 know some people are in

NOTE Confidence: 0.97304344

00:47:18.985 --> 00:47:19.485 particular.

NOTE Confidence: 0.8324207

00:47:20.185 --> 00:47:21.645 This part of the simplistically,

NOTE Confidence: 0.96400267

00:47:22.025 --> 00:47:23.945 hopefully not over simplistically, the

NOTE Confidence: 0.96400267

00:47:23.945 --> 00:47:25.305 orbital frontal cortex kind of

NOTE Confidence: 0.96400267

00:47:25.305 --> 00:47:27.090 determines and stores reward value,

NOTE Confidence: 0.96400267

00:47:27.250 --> 00:47:28.130 And this helps us make

NOTE Confidence: 0.96400267

00:47:28.130 --> 00:47:29.910 decisions quickly. So for example,

NOTE Confidence: 0.96400267

00:47:30.130 --> 00:47:31.090 if I eat some milk

NOTE Confidence: 0.96400267

00:47:31.090 --> 00:47:32.050 chocolate and some broccoli, my

NOTE Confidence: 0.96400267

00:47:32.050 --> 00:47:33.250 brain's gonna determine, you know,

NOTE Confidence: 0.96400267

00:47:33.250 --> 00:47:34.690 which one's more calorically dense

NOTE Confidence: 0.96400267

00:47:34.690 --> 00:47:36.210 from a survival standpoint. And

NOTE Confidence: 0.96400267

00:47:36.210 --> 00:47:37.810 generally, I'll prefer milk chocolate.

NOTE Confidence: 0.96400267

00:47:37.810 --> 00:47:38.610 If you give me some

NOTE Confidence: 0.96400267

00:47:38.610 --> 00:47:39.810 dark chocolate, I'm gonna prefer

NOTE Confidence: 0.96400267

00:47:39.810 --> 00:47:40.770 dark chocolate. We can get

NOTE Confidence: 0.96400267

00:47:40.770 --> 00:47:42.210 into sea salt and cayenne

NOTE Confidence: 0.96400267

00:47:42.210 --> 00:47:43.325 and all of that. But

NOTE Confidence: 0.96400267

00:47:43.325 --> 00:47:44.364 I set up this reward

NOTE Confidence: 0.96400267

00:47:44.364 --> 00:47:45.404 hierarchy in my brain so

NOTE Confidence: 0.96400267

00:47:45.404 --> 00:47:46.384 that I can make decisions.

NOTE Confidence: 0.96400267

00:47:46.444 --> 00:47:47.244 You know, I'm at the

NOTE Confidence: 0.96400267

00:47:47.244 --> 00:47:48.844 store. I see some chocolate

NOTE Confidence: 0.96400267

00:47:48.844 --> 00:47:49.805 bars. Okay. I want the

NOTE Confidence: 0.96400267

00:47:49.805 --> 00:47:50.924 dark chocolate with a little

NOTE Confidence: 0.96400267

00:47:50.924 --> 00:47:52.144 cayenne and sea salt.

NOTE Confidence: 0.979438

00:47:52.525 --> 00:47:53.884 So this goes back to

NOTE Confidence: 0.979438

00:47:53.884 --> 00:47:54.545 the 1970s

NOTE Confidence: 0.954461

00:47:54.844 --> 00:47:56.460 where Skorla and Wagner actually

NOTE Confidence: 0.954461

00:47:56.460 --> 00:47:57.739 worked out the math behind

NOTE Confidence: 0.954461

00:47:57.739 --> 00:47:59.500 how reinforcement learning works, and

NOTE Confidence: 0.954461

00:47:59.500 --> 00:48:00.700 it's actually a relatively simple

NOTE Confidence: 0.954461

00:48:00.700 --> 00:48:02.140 equation. These equations are still

NOTE Confidence: 0.954461

00:48:02.140 --> 00:48:03.040 used today.

NOTE Confidence: 0.8423741

00:48:03.580 --> 00:48:03.980 So,

NOTE Confidence: 0.9979869

00:48:04.460 --> 00:48:06.460 and they're important for both

NOTE Confidence: 0.9979869

00:48:06.460 --> 00:48:08.640 learning and unlearning behaviors.

NOTE Confidence: 0.9887749

00:48:09.525 --> 00:48:10.724 One thing I'll highlight here

NOTE Confidence: 0.9887749

00:48:10.724 --> 00:48:12.085 is that willpower is not

NOTE Confidence: 0.9887749

00:48:12.085 --> 00:48:13.444 part of this equation, but

NOTE Confidence: 0.9887749

00:48:13.444 --> 00:48:15.625 what is critical is awareness.

NOTE Confidence: 0.9887749

00:48:15.765 --> 00:48:17.305 So there's this error term

NOTE Confidence: 0.96490467

00:48:18.164 --> 00:48:18.885 that is,

NOTE Confidence: 0.9576292

00:48:19.285 --> 00:48:20.645 you know, the prediction error,  
NOTE Confidence: 0.9576292

00:48:20.645 --> 00:48:21.920 basically. So So if we  
NOTE Confidence: 0.9576292

00:48:21.920 --> 00:48:23.160 have a certain value, let's  
NOTE Confidence: 0.9576292

00:48:23.160 --> 00:48:24.840 use chocolate. I've if I  
NOTE Confidence: 0.9576292

00:48:24.840 --> 00:48:26.040 have a certain value of,  
NOTE Confidence: 0.9576292

00:48:26.040 --> 00:48:28.520 like, mango habanero truffles, just  
NOTE Confidence: 0.9576292

00:48:28.520 --> 00:48:29.260 as a hypothetical  
NOTE Confidence: 0.9628899

00:48:29.560 --> 00:48:31.080 illustration, and I go into  
NOTE Confidence: 0.9628899

00:48:31.080 --> 00:48:31.960 a new bakery and they've,  
NOTE Confidence: 0.9628899

00:48:31.960 --> 00:48:33.480 like, the best mango habanero  
NOTE Confidence: 0.9628899

00:48:33.480 --> 00:48:34.440 truffles I've ever had, I  
NOTE Confidence: 0.9628899

00:48:34.440 --> 00:48:35.560 get a positive prediction error.  
NOTE Confidence: 0.9628899

00:48:35.560 --> 00:48:36.984 It's better than expected. And  
NOTE Confidence: 0.9628899

00:48:36.984 --> 00:48:37.704 I learned, Hey, this is  
NOTE Confidence: 0.9628899

00:48:37.704 --> 00:48:38.905 good bakery. On the other  
NOTE Confidence: 0.9628899

00:48:38.905 --> 00:48:39.704 hand, if they taste like

NOTE Confidence: 0.9628899  
00:48:39.704 --> 00:48:40.825 cardboard, I'm like, you guys  
NOTE Confidence: 0.9628899  
00:48:40.825 --> 00:48:41.464 got to work on your  
NOTE Confidence: 0.9628899  
00:48:41.464 --> 00:48:42.744 formula. I get a negative  
NOTE Confidence: 0.9628899  
00:48:42.744 --> 00:48:44.265 prediction error where my brain  
NOTE Confidence: 0.9628899  
00:48:44.265 --> 00:48:46.185 says, not so good. And  
NOTE Confidence: 0.9628899  
00:48:46.185 --> 00:48:46.844 I learn  
NOTE Confidence: 0.9205271  
00:48:47.385 --> 00:48:48.665 right? Both, both sides of  
NOTE Confidence: 0.9205271  
00:48:48.665 --> 00:48:49.625 the equation I'm learning and  
NOTE Confidence: 0.9205271  
00:48:49.625 --> 00:48:50.585 learn, oh, this isn't such  
NOTE Confidence: 0.9205271  
00:48:50.585 --> 00:48:51.900 a good place. Well, we  
NOTE Confidence: 0.9205271  
00:48:51.900 --> 00:48:53.680 can actually apply this clinically  
NOTE Confidence: 0.9205271  
00:48:53.819 --> 00:48:54.859 where we can say, pay  
NOTE Confidence: 0.9205271  
00:48:54.859 --> 00:48:55.359 attention,  
NOTE Confidence: 0.9995195  
00:48:55.739 --> 00:48:57.020 see if something is actually  
NOTE Confidence: 0.9995195  
00:48:57.020 --> 00:48:57.520 rewarding  
NOTE Confidence: 0.9530708

00:48:57.980 --> 00:48:59.260 and then see what happens  
NOTE Confidence: 0.9530708

00:48:59.260 --> 00:49:00.619 next. Don't force yourself not  
NOTE Confidence: 0.9530708

00:49:00.619 --> 00:49:01.579 to do it. Just see  
NOTE Confidence: 0.9530708

00:49:01.579 --> 00:49:03.339 how rewarding it is. So  
NOTE Confidence: 0.9530708

00:49:03.339 --> 00:49:04.559 we can do the studies  
NOTE Confidence: 0.9530708

00:49:04.700 --> 00:49:06.380 and actually measure change in  
NOTE Confidence: 0.9530708

00:49:06.380 --> 00:49:08.275 reward value. And Long story  
NOTE Confidence: 0.9530708

00:49:08.275 --> 00:49:09.555 short, it doesn't take that  
NOTE Confidence: 0.9530708

00:49:09.555 --> 00:49:10.594 long for somebody to pay  
NOTE Confidence: 0.9530708

00:49:10.594 --> 00:49:11.875 attention when they're overeating to  
NOTE Confidence: 0.9530708

00:49:11.875 --> 00:49:13.815 see that see and importantly  
NOTE Confidence: 0.9530708

00:49:13.875 --> 00:49:15.955 feel that overeating doesn't feel  
NOTE Confidence: 0.9530708

00:49:15.955 --> 00:49:17.155 very good and they start  
NOTE Confidence: 0.9530708

00:49:17.155 --> 00:49:18.275 to shift that behavior. This  
NOTE Confidence: 0.9530708

00:49:18.275 --> 00:49:20.035 was a small study, led  
NOTE Confidence: 0.9530708

00:49:20.035 --> 00:49:21.255 by one of my undergraduates.

NOTE Confidence: 0.9598432

00:49:22.170 --> 00:49:23.290 But then we replicate this

NOTE Confidence: 0.9598432

00:49:23.290 --> 00:49:24.410 in a community sample. And

NOTE Confidence: 0.9598432

00:49:24.410 --> 00:49:26.010 you can see that that

NOTE Confidence: 0.9598432

00:49:26.010 --> 00:49:28.170 shift happens relatively quickly, or

NOTE Confidence: 0.9598432

00:49:28.170 --> 00:49:29.690 as people put it, dear

NOTE Confidence: 0.9598432

00:49:29.690 --> 00:49:30.890 sneaky habit loop that says

NOTE Confidence: 0.9598432

00:49:30.890 --> 00:49:31.849 eating junk food is fun.

NOTE Confidence: 0.9598432

00:49:31.849 --> 00:49:32.730 I'm on to you. Right?

NOTE Confidence: 0.9598432

00:49:32.730 --> 00:49:34.215 So that reward value shifts.

NOTE Confidence: 0.9598432

00:49:34.455 --> 00:49:35.335 We see the same thing

NOTE Confidence: 0.9598432

00:49:35.335 --> 00:49:37.435 in smoking. Interestingly, this happens

NOTE Confidence: 0.9598432

00:49:37.495 --> 00:49:38.395 less quickly,

NOTE Confidence: 0.9868553

00:49:38.695 --> 00:49:39.594 probably because,

NOTE Confidence: 0.9929341

00:49:40.135 --> 00:49:41.335 you can smoke twenty cigarettes

NOTE Confidence: 0.9929341

00:49:41.335 --> 00:49:42.055 a day, but you don't

NOTE Confidence: 0.9929341

00:49:42.055 --> 00:49:43.335 overeat twenty times a day.

NOTE Confidence: 0.9929341

00:49:43.335 --> 00:49:44.235 Most people don't.

NOTE Confidence: 0.9787277

00:49:44.614 --> 00:49:45.495 But you can still see

NOTE Confidence: 0.9787277

00:49:45.495 --> 00:49:46.800 that the general trend holds

NOTE Confidence: 0.9787277

00:49:46.800 --> 00:49:48.000 true. Or similar to what

NOTE Confidence: 0.9787277

00:49:48.000 --> 00:49:49.360 I showed earlier, one person

NOTE Confidence: 0.9787277

00:49:49.360 --> 00:49:50.560 said, today, all the cigarettes

NOTE Confidence: 0.9787277

00:49:50.560 --> 00:49:52.239 I smoked were disgusting. So

NOTE Confidence: 0.9787277

00:49:52.239 --> 00:49:53.040 this is something that we

NOTE Confidence: 0.9787277

00:49:53.040 --> 00:49:54.400 can apply clinically. You don't

NOTE Confidence: 0.9787277

00:49:54.400 --> 00:49:55.200 need an app. You don't

NOTE Confidence: 0.9787277

00:49:55.200 --> 00:49:56.239 need a formal training. You

NOTE Confidence: 0.9787277

00:49:56.239 --> 00:49:57.280 can say, hey. Pay attention

NOTE Confidence: 0.9787277

00:49:57.280 --> 00:49:58.480 as you smoke a cigarette.

NOTE Confidence: 0.9787277

00:49:58.480 --> 00:50:00.395 But importantly, keep that mechanism

NOTE Confidence: 0.9787277

00:50:00.455 --> 00:50:01.815 in mind. If somebody does

NOTE Confidence: 0.9787277

00:50:01.815 --> 00:50:02.935 this out of context, they're

NOTE Confidence: 0.9787277

00:50:02.935 --> 00:50:03.735 gonna be like, I don't

NOTE Confidence: 0.9787277

00:50:03.735 --> 00:50:05.114 know why I'm doing this.

NOTE Confidence: 0.9787277

00:50:05.255 --> 00:50:06.135 So a little bit of

NOTE Confidence: 0.9787277

00:50:06.135 --> 00:50:08.135 psychoeducation first and then helping

NOTE Confidence: 0.9787277

00:50:08.135 --> 00:50:09.415 people ask the simple question,

NOTE Confidence: 0.9787277

00:50:09.415 --> 00:50:10.455 what am I getting from

NOTE Confidence: 0.9787277

00:50:10.455 --> 00:50:11.975 this? Right? And feeling into

NOTE Confidence: 0.9787277

00:50:11.975 --> 00:50:12.955 their direct experience

NOTE Confidence: 0.99887055

00:50:13.255 --> 00:50:14.215 can have a lot of

NOTE Confidence: 0.99887055

00:50:14.215 --> 00:50:14.715 effects.

NOTE Confidence: 0.99340475

00:50:15.380 --> 00:50:17.540 Last step here is, finding

NOTE Confidence: 0.99340475

00:50:17.540 --> 00:50:18.420 what I think of as

NOTE Confidence: 0.99340475

00:50:18.420 --> 00:50:19.620 rewards that are more rewarding.

NOTE Confidence: 0.99340475

00:50:19.620 --> 00:50:20.500 So what can we find

NOTE Confidence: 0.99340475

00:50:20.500 --> 00:50:22.040 that's intrinsically rewarding  
NOTE Confidence: 0.93547046

00:50:22.420 --> 00:50:23.719 that we can tap into,  
NOTE Confidence: 0.93547046

00:50:23.940 --> 00:50:24.980 maybe even use it as  
NOTE Confidence: 0.93547046

00:50:24.980 --> 00:50:27.315 a superpower? And here, I'm  
NOTE Confidence: 0.93547046

00:50:27.315 --> 00:50:28.594 going to highlight another quote  
NOTE Confidence: 0.93547046

00:50:28.594 --> 00:50:29.915 attributed to Einstein. You know,  
NOTE Confidence: 0.93547046

00:50:29.915 --> 00:50:31.315 I'm, I'm of no special  
NOTE Confidence: 0.93547046

00:50:31.315 --> 00:50:33.015 talents. I'm only passionately curious.  
NOTE Confidence: 0.99578446

00:50:33.395 --> 00:50:34.695 So what if we substituted  
NOTE Confidence: 0.9996228

00:50:35.315 --> 00:50:35.815 curiosity  
NOTE Confidence: 0.9270328

00:50:36.435 --> 00:50:37.635 for these other behaviors? So  
NOTE Confidence: 0.9270328

00:50:37.635 --> 00:50:38.755 when we have, when we're  
NOTE Confidence: 0.9270328

00:50:38.755 --> 00:50:39.955 worrying that, oh, no of  
NOTE Confidence: 0.9270328

00:50:39.955 --> 00:50:41.315 worry, what if we go,  
NOTE Confidence: 0.9270328

00:50:41.315 --> 00:50:41.815 oh,  
NOTE Confidence: 0.9897552

00:50:42.130 --> 00:50:43.250 what does this feel like

NOTE Confidence: 0.9897552

00:50:43.250 --> 00:50:44.210 in my body? And we

NOTE Confidence: 0.9897552

00:50:44.210 --> 00:50:45.109 turn our experience

NOTE Confidence: 0.9766201

00:50:45.410 --> 00:50:47.330 toward ourselves instead of running

NOTE Confidence: 0.9766201

00:50:47.330 --> 00:50:48.290 away from it or doing

NOTE Confidence: 0.9766201

00:50:48.290 --> 00:50:50.130 something to distract ourselves. Here,

NOTE Confidence: 0.9766201

00:50:50.130 --> 00:50:51.330 I love the quote, you

NOTE Confidence: 0.9766201

00:50:51.330 --> 00:50:52.609 know, the only way out

NOTE Confidence: 0.9766201

00:50:52.609 --> 00:50:54.369 is through. So instead of

NOTE Confidence: 0.9766201

00:50:54.369 --> 00:50:55.190 being afraid

NOTE Confidence: 0.9626204

00:50:55.494 --> 00:50:57.015 of our sensations, of our

NOTE Confidence: 0.9626204

00:50:57.015 --> 00:50:58.775 thoughts, we get curious. Oh,

NOTE Confidence: 0.9626204

00:50:58.775 --> 00:51:00.155 what does that feel like?

NOTE Confidence: 0.9626204

00:51:00.375 --> 00:51:01.335 That might seem a little

NOTE Confidence: 0.9626204

00:51:01.335 --> 00:51:02.935 far fetched, but we've actually

NOTE Confidence: 0.9626204

00:51:02.935 --> 00:51:04.535 seen cases where, you know,

NOTE Confidence: 0.9626204

00:51:04.535 --> 00:51:05.974 this person said, I didn't  
NOTE Confidence: 0.9626204

00:51:05.974 --> 00:51:07.255 quite buy into the benefits  
NOTE Confidence: 0.9626204

00:51:07.255 --> 00:51:08.695 of curiosity. Today, I felt  
NOTE Confidence: 0.9626204

00:51:08.695 --> 00:51:09.750 a wave of panic. And  
NOTE Confidence: 0.9626204

00:51:09.750 --> 00:51:11.030 instead of immediate dread or  
NOTE Confidence: 0.9626204

00:51:11.030 --> 00:51:13.290 fear, my automatic response was,  
NOTE Confidence: 0.9626204

00:51:13.430 --> 00:51:14.890 that's interesting. So that  
NOTE Confidence: 0.9615183

00:51:15.430 --> 00:51:16.710 helps us open to our  
NOTE Confidence: 0.9615183

00:51:16.710 --> 00:51:17.210 experience.  
NOTE Confidence: 0.9730941

00:51:17.670 --> 00:51:18.469 And they said, you know,  
NOTE Confidence: 0.9730941

00:51:18.469 --> 00:51:19.270 took the wind right out  
NOTE Confidence: 0.9730941

00:51:19.270 --> 00:51:20.070 of the sails. I'm just  
NOTE Confidence: 0.9730941

00:51:20.070 --> 00:51:21.270 saying it was interesting. I  
NOTE Confidence: 0.9730941

00:51:21.270 --> 00:51:22.585 actually felt it. So I  
NOTE Confidence: 0.9730941

00:51:22.585 --> 00:51:23.705 won't go into the details,  
NOTE Confidence: 0.9730941

00:51:23.705 --> 00:51:25.145 but this suggests that that,

NOTE Confidence: 0.9730941  
00:51:25.145 --> 00:51:26.505 you know, just take mindfulness  
NOTE Confidence: 0.9730941  
00:51:26.505 --> 00:51:27.005 training  
NOTE Confidence: 0.999547  
00:51:27.305 --> 00:51:28.344 as a way to train  
NOTE Confidence: 0.999547  
00:51:28.344 --> 00:51:28.844 curiosity  
NOTE Confidence: 0.9408401  
00:51:29.545 --> 00:51:30.905 instead of, you know, getting  
NOTE Confidence: 0.9408401  
00:51:30.905 --> 00:51:31.864 caught up in our habitual  
NOTE Confidence: 0.9408401  
00:51:31.864 --> 00:51:33.545 behaviors. It's path a in  
NOTE Confidence: 0.9408401  
00:51:33.545 --> 00:51:35.065 this diagram, or trying to  
NOTE Confidence: 0.9408401  
00:51:35.065 --> 00:51:35.965 force ourselves  
NOTE Confidence: 0.9628866  
00:51:36.344 --> 00:51:37.465 to not do the thing,  
NOTE Confidence: 0.9628866  
00:51:37.465 --> 00:51:39.230 whether it's smoke or eat  
NOTE Confidence: 0.9628866  
00:51:39.230 --> 00:51:39.969 or worry.  
NOTE Confidence: 0.9847899  
00:51:40.270 --> 00:51:41.310 What if we actually brought  
NOTE Confidence: 0.9847899  
00:51:41.310 --> 00:51:43.070 that curiosity in so that  
NOTE Confidence: 0.9847899  
00:51:43.070 --> 00:51:44.290 we could have this unforced  
NOTE Confidence: 0.9143448

00:51:44.670 --> 00:51:46.510 and and our patients described  
NOTE Confidence: 0.9143448

00:51:46.510 --> 00:51:47.390 it this way as this  
NOTE Confidence: 0.9143448

00:51:47.390 --> 00:51:48.829 third step is this unforced  
NOTE Confidence: 0.9143448

00:51:48.829 --> 00:51:50.270 freedom of choice that emerges  
NOTE Confidence: 0.9143448

00:51:50.270 --> 00:51:51.710 from embodied awareness. That's their  
NOTE Confidence: 0.9143448

00:51:51.710 --> 00:51:52.690 words, their definition  
NOTE Confidence: 0.9896179

00:51:53.195 --> 00:51:54.395 that came from these focus  
NOTE Confidence: 0.9896179

00:51:54.395 --> 00:51:55.994 groups. These these can be  
NOTE Confidence: 0.9896179

00:51:55.994 --> 00:51:57.035 both aligned with our goals,  
NOTE Confidence: 0.9896179

00:51:57.035 --> 00:51:58.555 but also not feel like  
NOTE Confidence: 0.9896179

00:51:58.555 --> 00:51:59.455 a lot of work.  
NOTE Confidence: 0.98816025

00:51:59.994 --> 00:52:01.114 So I'm gonna I'm gonna  
NOTE Confidence: 0.98816025

00:52:01.114 --> 00:52:02.255 end there and just say,  
NOTE Confidence: 0.9899368

00:52:02.795 --> 00:52:04.155 we're starting to bring this  
NOTE Confidence: 0.9899368

00:52:04.155 --> 00:52:05.614 into physician burnout,  
NOTE Confidence: 0.98955095

00:52:06.989 --> 00:52:07.950 because there are a lot

NOTE Confidence: 0.98955095

00:52:07.950 --> 00:52:10.450 of, misconceptions and misnomers around,

NOTE Confidence: 0.98955095

00:52:10.510 --> 00:52:11.870 you know, how, you know,

NOTE Confidence: 0.98955095

00:52:11.870 --> 00:52:12.750 we're supposed to learn to

NOTE Confidence: 0.98955095

00:52:12.750 --> 00:52:13.950 be empathetic with our patients.

NOTE Confidence: 0.98955095

00:52:13.950 --> 00:52:14.830 Well, if our patients are

NOTE Confidence: 0.98955095

00:52:14.830 --> 00:52:15.950 suffering, we might be suffering

NOTE Confidence: 0.98955095

00:52:15.950 --> 00:52:16.670 as well. We might be

NOTE Confidence: 0.98955095

00:52:16.670 --> 00:52:18.430 burning out. So can we

NOTE Confidence: 0.98955095

00:52:18.430 --> 00:52:19.630 actually start to apply some

NOTE Confidence: 0.98955095

00:52:19.630 --> 00:52:20.450 of these principles,

NOTE Confidence: 0.96475315

00:52:20.830 --> 00:52:21.489 to helping,

NOTE Confidence: 0.9224754

00:52:22.594 --> 00:52:24.994 people like ourselves and develop

NOTE Confidence: 0.9224754

00:52:24.994 --> 00:52:26.614 resilience and reduce burnout?

NOTE Confidence: 0.8455934

00:52:27.234 --> 00:52:28.515 I'm not gonna go into

NOTE Confidence: 0.8455934

00:52:28.515 --> 00:52:29.015 the

NOTE Confidence: 0.97001326

00:52:29.474 --> 00:52:30.755 the data, but just to  
NOTE Confidence: 0.97001326

00:52:30.755 --> 00:52:31.555 give you a hint of  
NOTE Confidence: 0.97001326

00:52:31.555 --> 00:52:32.454 some of the work,  
NOTE Confidence: 0.9612799

00:52:32.994 --> 00:52:33.875 that that we've,  
NOTE Confidence: 0.9365921

00:52:34.755 --> 00:52:36.650 that we're moving forward with,  
NOTE Confidence: 0.9365921

00:52:36.650 --> 00:52:37.770 it you you can start  
NOTE Confidence: 0.9365921

00:52:37.770 --> 00:52:38.890 to see some signal here.  
NOTE Confidence: 0.9365921

00:52:38.890 --> 00:52:40.030 Again, pilot work,  
NOTE Confidence: 0.9626494

00:52:40.330 --> 00:52:41.930 when we actually just deliver  
NOTE Confidence: 0.9626494

00:52:41.930 --> 00:52:43.210 this through a podcast, it's  
NOTE Confidence: 0.9626494

00:52:43.210 --> 00:52:44.830 like, what will physicians do?  
NOTE Confidence: 0.9626494

00:52:44.890 --> 00:52:46.170 They'll listen to podcasts. They'll  
NOTE Confidence: 0.9626494

00:52:46.170 --> 00:52:47.210 drive to work for fifteen  
NOTE Confidence: 0.9626494

00:52:47.210 --> 00:52:48.090 minutes a day. So can  
NOTE Confidence: 0.9626494

00:52:48.090 --> 00:52:49.290 we give them seven short  
NOTE Confidence: 0.9626494

00:52:49.290 --> 00:52:50.454 segments, you you know, through

NOTE Confidence: 0.9626494

00:52:50.454 --> 00:52:51.494 a podcast and see if

NOTE Confidence: 0.9626494

00:52:51.494 --> 00:52:52.214 we can get an effect?

NOTE Confidence: 0.9626494

00:52:52.214 --> 00:52:52.855 And we can you know,

NOTE Confidence: 0.9626494

00:52:52.855 --> 00:52:54.135 we're starting to see some

NOTE Confidence: 0.9626494

00:52:54.135 --> 00:52:55.035 signal there.

NOTE Confidence: 0.9526502

00:52:55.335 --> 00:52:56.614 So I'll just end, you

NOTE Confidence: 0.9526502

00:52:56.614 --> 00:52:57.895 know, of course, I'm only

NOTE Confidence: 0.9526502

00:52:57.895 --> 00:52:59.655 gonna share examples of patients

NOTE Confidence: 0.9526502

00:52:59.655 --> 00:53:00.454 who do well,

NOTE Confidence: 0.96160614

00:53:01.094 --> 00:53:02.694 but plenty of patients that

NOTE Confidence: 0.96160614

00:53:02.694 --> 00:53:03.969 struggle. But how about my

NOTE Confidence: 0.96160614

00:53:03.969 --> 00:53:04.850 patient who came in with

NOTE Confidence: 0.96160614

00:53:04.850 --> 00:53:06.370 binge eating disorder, that she'd

NOTE Confidence: 0.96160614

00:53:06.370 --> 00:53:07.410 been doing for about twenty

NOTE Confidence: 0.96160614

00:53:07.410 --> 00:53:09.330 years? Well, as she started

NOTE Confidence: 0.96160614

00:53:09.330 --> 00:53:10.690 to learn to be aware  
NOTE Confidence: 0.96160614

00:53:10.690 --> 00:53:12.290 and and importantly kind to  
NOTE Confidence: 0.96160614

00:53:12.290 --> 00:53:13.170 herself, we didn't get a  
NOTE Confidence: 0.96160614

00:53:13.170 --> 00:53:14.370 chance to talk about kindness  
NOTE Confidence: 0.96160614

00:53:14.370 --> 00:53:15.410 as another side of the  
NOTE Confidence: 0.96160614

00:53:15.410 --> 00:53:16.930 coin of of curiosity, but  
NOTE Confidence: 0.96160614

00:53:16.930 --> 00:53:18.310 really critical as well.  
NOTE Confidence: 0.9901324

00:53:19.285 --> 00:53:20.485 She came back about four  
NOTE Confidence: 0.9901324

00:53:20.485 --> 00:53:22.085 months, later and said, you  
NOTE Confidence: 0.9901324

00:53:22.085 --> 00:53:22.585 know,  
NOTE Confidence: 0.9652908

00:53:22.885 --> 00:53:23.685 I I feel like I  
NOTE Confidence: 0.9652908

00:53:23.685 --> 00:53:24.645 have my life back. I  
NOTE Confidence: 0.9652908

00:53:24.645 --> 00:53:25.765 can eat actually eat a  
NOTE Confidence: 0.9652908

00:53:25.765 --> 00:53:27.445 single piece of pizza and  
NOTE Confidence: 0.9652908

00:53:27.445 --> 00:53:28.565 enjoy it. And I like  
NOTE Confidence: 0.9652908

00:53:28.565 --> 00:53:29.925 that because she's highlighting it's

NOTE Confidence: 0.9652908

00:53:29.925 --> 00:53:31.525 not about avoiding whatever it

NOTE Confidence: 0.9652908

00:53:31.525 --> 00:53:33.125 is. It's about changing our

NOTE Confidence: 0.9652908

00:53:33.125 --> 00:53:34.325 relationship to it. And in

NOTE Confidence: 0.9652908

00:53:34.325 --> 00:53:35.540 fact, just a couple of

NOTE Confidence: 0.9652908

00:53:35.540 --> 00:53:36.739 months ago, this was, I

NOTE Confidence: 0.9652908

00:53:36.739 --> 00:53:38.440 saw, eight or nine years

NOTE Confidence: 0.9641533

00:53:38.820 --> 00:53:39.940 ago, she sent me a

NOTE Confidence: 0.9641533

00:53:39.940 --> 00:53:40.980 email. I it took me

NOTE Confidence: 0.9641533

00:53:40.980 --> 00:53:42.180 a while to even register

NOTE Confidence: 0.9641533

00:53:42.180 --> 00:53:43.780 who this person was. And

NOTE Confidence: 0.9641533

00:53:43.780 --> 00:53:44.580 she said, hey. I just

NOTE Confidence: 0.9641533

00:53:44.580 --> 00:53:45.800 wanna send you an email.

NOTE Confidence: 0.9865958

00:53:46.420 --> 00:53:47.540 I've now, you know, lost

NOTE Confidence: 0.9865958

00:53:47.540 --> 00:53:48.680 over a hundred pounds.

NOTE Confidence: 0.99170405

00:53:49.375 --> 00:53:50.575 I've checked off a bunch

NOTE Confidence: 0.99170405

00:53:50.575 --> 00:53:52.015 of things on my bucket  
NOTE Confidence: 0.99170405

00:53:52.015 --> 00:53:52.815 list, including,  
NOTE Confidence: 0.9178511

00:53:53.215 --> 00:53:54.495 hiking to base camp of  
NOTE Confidence: 0.9178511

00:53:54.495 --> 00:53:55.855 Mount Everest. And just said,  
NOTE Confidence: 0.9178511

00:53:55.855 --> 00:53:57.055 you know, these these techniques  
NOTE Confidence: 0.9178511

00:53:57.055 --> 00:53:58.015 have really helped me,  
NOTE Confidence: 0.95868015

00:53:58.575 --> 00:53:59.614 discover a lot about myself.  
NOTE Confidence: 0.95868015

00:53:59.614 --> 00:54:00.735 She's even talking about writing  
NOTE Confidence: 0.95868015

00:54:00.735 --> 00:54:01.875 a book about her experience.  
NOTE Confidence: 0.9675503

00:54:02.255 --> 00:54:04.010 So this highlights, you know,  
NOTE Confidence: 0.9675503

00:54:04.010 --> 00:54:04.969 when we learn a little  
NOTE Confidence: 0.9675503

00:54:04.969 --> 00:54:06.750 bit about ourselves, this can  
NOTE Confidence: 0.9675503

00:54:06.890 --> 00:54:08.510 gain the strength of curiosity  
NOTE Confidence: 0.9675503

00:54:08.570 --> 00:54:10.010 and kindness. These can go  
NOTE Confidence: 0.9675503

00:54:10.010 --> 00:54:10.750 a long way.  
NOTE Confidence: 0.9551557

00:54:11.369 --> 00:54:12.810 How about my patient with

NOTE Confidence: 0.9551557  
00:54:12.810 --> 00:54:14.810 anxiety? Well, I'd send him  
NOTE Confidence: 0.9551557  
00:54:14.810 --> 00:54:16.125 home to map out his  
NOTE Confidence: 0.9551557  
00:54:16.205 --> 00:54:17.165 anxiety habit loops. He comes  
NOTE Confidence: 0.9551557  
00:54:17.165 --> 00:54:17.965 back two weeks later. And  
NOTE Confidence: 0.9551557  
00:54:17.965 --> 00:54:18.685 the first thing he says  
NOTE Confidence: 0.9551557  
00:54:18.685 --> 00:54:19.645 to me is, Hey doc,  
NOTE Confidence: 0.9551557  
00:54:19.645 --> 00:54:21.405 I lost fourteen pounds. I  
NOTE Confidence: 0.9551557  
00:54:21.405 --> 00:54:22.285 looked at him like, I  
NOTE Confidence: 0.9551557  
00:54:22.285 --> 00:54:23.245 didn't even think we talked  
NOTE Confidence: 0.9551557  
00:54:23.245 --> 00:54:24.125 about weight loss yet, because  
NOTE Confidence: 0.9551557  
00:54:24.125 --> 00:54:24.685 that was going to be  
NOTE Confidence: 0.9551557  
00:54:24.685 --> 00:54:25.485 lower on the list. And  
NOTE Confidence: 0.9551557  
00:54:25.485 --> 00:54:26.605 he said, I realized that  
NOTE Confidence: 0.9551557  
00:54:26.605 --> 00:54:27.505 I was eating,  
NOTE Confidence: 0.91181064  
00:54:28.340 --> 00:54:29.780 fast food in particular, as  
NOTE Confidence: 0.91181064

00:54:29.780 --> 00:54:30.980 he's described it as his  
NOTE Confidence: 0.91181064

00:54:30.980 --> 00:54:31.480 addiction,  
NOTE Confidence: 0.9552932

00:54:31.860 --> 00:54:33.060 and that it wasn't actually  
NOTE Confidence: 0.9552932

00:54:33.060 --> 00:54:33.859 serving me, you know, it's  
NOTE Confidence: 0.9552932

00:54:33.940 --> 00:54:35.239 and so I've become disenchanted.  
NOTE Confidence: 0.9552932

00:54:35.300 --> 00:54:36.180 He also went on to  
NOTE Confidence: 0.9552932

00:54:36.180 --> 00:54:37.480 lose over a hundred pounds.  
NOTE Confidence: 0.9552932

00:54:37.700 --> 00:54:38.980 But about six months into  
NOTE Confidence: 0.9552932

00:54:38.980 --> 00:54:40.180 treatment, I'm walking out of  
NOTE Confidence: 0.9552932

00:54:40.180 --> 00:54:41.385 our school of public health  
NOTE Confidence: 0.9552932

00:54:41.385 --> 00:54:42.185 For any of you that  
NOTE Confidence: 0.9552932

00:54:42.185 --> 00:54:43.065 have been in Providence, the  
NOTE Confidence: 0.9552932

00:54:43.065 --> 00:54:44.105 school of public health on  
NOTE Confidence: 0.9552932

00:54:44.105 --> 00:54:45.465 main street, pretty busy, narrow  
NOTE Confidence: 0.9552932

00:54:45.545 --> 00:54:46.344 well, all the streets in  
NOTE Confidence: 0.9552932

00:54:46.344 --> 00:54:47.705 Providence are narrow, but a

NOTE Confidence: 0.9552932  
00:54:47.705 --> 00:54:49.545 busy, narrow street, this guy  
NOTE Confidence: 0.9552932  
00:54:49.545 --> 00:54:50.825 pulls up, rolls down his  
NOTE Confidence: 0.9552932  
00:54:50.825 --> 00:54:51.864 window, my patient. I'm like,  
NOTE Confidence: 0.9552932  
00:54:51.864 --> 00:54:53.305 great. He's driving. Gives me  
NOTE Confidence: 0.9552932  
00:54:53.305 --> 00:54:54.585 this big grin. He goes,  
NOTE Confidence: 0.9552932  
00:54:54.585 --> 00:54:55.750 Hey doc, I'm an Uber  
NOTE Confidence: 0.9552932  
00:54:55.750 --> 00:54:57.350 driver now. I'm headed to  
NOTE Confidence: 0.9552932  
00:54:57.350 --> 00:54:58.470 the airport to pick somebody  
NOTE Confidence: 0.9552932  
00:54:58.470 --> 00:55:00.310 up. So I just wanna  
NOTE Confidence: 0.9552932  
00:55:00.470 --> 00:55:02.230 again, these are extreme cases  
NOTE Confidence: 0.9552932  
00:55:02.230 --> 00:55:04.150 that that highlight points. But  
NOTE Confidence: 0.9552932  
00:55:04.150 --> 00:55:05.270 maybe I'll just I'll just  
NOTE Confidence: 0.9552932  
00:55:05.270 --> 00:55:06.410 bring this to a close  
NOTE Confidence: 0.9552932  
00:55:06.550 --> 00:55:07.910 by highlighting how this is  
NOTE Confidence: 0.9552932  
00:55:07.910 --> 00:55:09.030 different than a lot of  
NOTE Confidence: 0.9552932

00:55:09.030 --> 00:55:10.390 other things. It's not about,  
NOTE Confidence: 0.9552932

00:55:10.390 --> 00:55:11.875 you know, if I do  
NOTE Confidence: 0.9552932

00:55:11.875 --> 00:55:13.315 x, then I'm happy. It's  
NOTE Confidence: 0.9552932

00:55:13.315 --> 00:55:14.675 about the the journey as  
NOTE Confidence: 0.9552932

00:55:14.675 --> 00:55:16.775 compared to the, the destinations.  
NOTE Confidence: 0.9552932

00:55:16.995 --> 00:55:18.195 This person said what's most  
NOTE Confidence: 0.9552932

00:55:18.195 --> 00:55:20.115 interesting to me is how  
NOTE Confidence: 0.9552932

00:55:20.115 --> 00:55:21.155 we define the rewards. In  
NOTE Confidence: 0.9552932

00:55:21.155 --> 00:55:21.955 the past, the reward of  
NOTE Confidence: 0.9552932

00:55:21.955 --> 00:55:22.915 eating right has been weight  
NOTE Confidence: 0.9552932

00:55:22.915 --> 00:55:24.770 loss, but it's more often  
NOTE Confidence: 0.9552932

00:55:24.770 --> 00:55:25.890 than not short lived because  
NOTE Confidence: 0.9552932

00:55:25.890 --> 00:55:26.770 I hadn't made the real  
NOTE Confidence: 0.9552932

00:55:26.770 --> 00:55:28.130 process changes in my daily  
NOTE Confidence: 0.9552932

00:55:28.130 --> 00:55:29.250 life. Here, it feels like  
NOTE Confidence: 0.9552932

00:55:29.250 --> 00:55:30.550 the reward is defined differently,

NOTE Confidence: 0.996478  
00:55:31.010 --> 00:55:32.210 and weight loss is a  
NOTE Confidence: 0.996478  
00:55:32.210 --> 00:55:32.950 side effect.  
NOTE Confidence: 0.92548317  
00:55:33.250 --> 00:55:34.050 The reward is here, for  
NOTE Confidence: 0.92548317  
00:55:34.050 --> 00:55:35.250 lack of better expression, a  
NOTE Confidence: 0.92548317  
00:55:35.250 --> 00:55:36.835 more balanced life or inner  
NOTE Confidence: 0.92548317  
00:55:36.835 --> 00:55:37.335 peace.  
NOTE Confidence: 0.97662807  
00:55:38.195 --> 00:55:39.715 So I'll just end there.  
NOTE Confidence: 0.97662807  
00:55:39.715 --> 00:55:41.235 I just wanna say, you  
NOTE Confidence: 0.97662807  
00:55:41.235 --> 00:55:42.355 know, I get to stand  
NOTE Confidence: 0.97662807  
00:55:42.355 --> 00:55:43.155 up here and talk about  
NOTE Confidence: 0.97662807  
00:55:43.155 --> 00:55:43.875 all this work, but we've  
NOTE Confidence: 0.97662807  
00:55:43.875 --> 00:55:44.375 had  
NOTE Confidence: 0.9580122  
00:55:44.755 --> 00:55:46.435 tons of great people starting  
NOTE Confidence: 0.9580122  
00:55:46.435 --> 00:55:47.955 with the folks that that,  
NOTE Confidence: 0.99253386  
00:55:48.690 --> 00:55:49.810 donated their time and their  
NOTE Confidence: 0.99253386

00:55:49.810 --> 00:55:51.170 their brains to be scanned  
NOTE Confidence: 0.99253386

00:55:51.170 --> 00:55:52.290 for this work. But as  
NOTE Confidence: 0.99253386

00:55:52.290 --> 00:55:53.010 you can see here, a  
NOTE Confidence: 0.99253386

00:55:53.010 --> 00:55:53.910 lot of collaborators,  
NOTE Confidence: 0.9508913

00:55:54.770 --> 00:55:55.650 many of whom,  
NOTE Confidence: 0.97057277

00:55:57.329 --> 00:55:58.609 are or were here at  
NOTE Confidence: 0.97057277

00:55:58.609 --> 00:56:00.609 Yale. And so I'll just  
NOTE Confidence: 0.97057277

00:56:00.609 --> 00:56:01.989 end there and say,  
NOTE Confidence: 0.95942307

00:56:02.795 --> 00:56:04.095 we are gonna be recruiting  
NOTE Confidence: 0.95942307

00:56:04.155 --> 00:56:05.835 for physicians for a for  
NOTE Confidence: 0.95942307

00:56:05.835 --> 00:56:07.595 a study, coming shortly. So  
NOTE Confidence: 0.95942307

00:56:07.595 --> 00:56:08.315 if you know folks that  
NOTE Confidence: 0.95942307

00:56:08.315 --> 00:56:09.675 are interested, you can send  
NOTE Confidence: 0.95942307

00:56:09.675 --> 00:56:10.955 them my way. And also,  
NOTE Confidence: 0.95942307

00:56:10.955 --> 00:56:12.175 we've started a nonprofit,  
NOTE Confidence: 0.990875

00:56:12.875 --> 00:56:14.235 to see how we can

NOTE Confidence: 0.990875  
00:56:14.235 --> 00:56:16.155 bring together digital therapeutics with  
NOTE Confidence: 0.990875  
00:56:16.155 --> 00:56:16.895 peer mentorship,  
NOTE Confidence: 0.99055773  
00:56:17.719 --> 00:56:19.420 to help people who are  
NOTE Confidence: 0.99055773  
00:56:19.640 --> 00:56:20.920 who are in recovery or  
NOTE Confidence: 0.99055773  
00:56:20.920 --> 00:56:21.420 struggling,  
NOTE Confidence: 0.966169  
00:56:21.799 --> 00:56:23.319 with addiction. So if you're  
NOTE Confidence: 0.966169  
00:56:23.319 --> 00:56:24.119 interested in that work, you  
NOTE Confidence: 0.966169  
00:56:24.119 --> 00:56:24.920 can just check out mind  
NOTE Confidence: 0.966169  
00:56:24.920 --> 00:56:26.280 shift recovery dot org. But  
NOTE Confidence: 0.966169  
00:56:26.280 --> 00:56:27.319 if you remember nothing else,  
NOTE Confidence: 0.966169  
00:56:27.319 --> 00:56:28.760 remember this curiosity piece, or  
NOTE Confidence: 0.966169  
00:56:28.760 --> 00:56:30.039 as as Mary Oliver puts  
NOTE Confidence: 0.966169  
00:56:30.039 --> 00:56:31.739 it, pay attention, be astonished,  
NOTE Confidence: 0.9965554  
00:56:32.295 --> 00:56:33.734 and tell about it. So  
NOTE Confidence: 0.9965554  
00:56:33.734 --> 00:56:34.474 with that,  
NOTE Confidence: 0.9506021

00:56:34.855 --> 00:56:35.974 I wanna say I I

NOTE Confidence: 0.9506021

00:56:35.974 --> 00:56:37.335 personally went over so you

NOTE Confidence: 0.9506021

00:56:37.335 --> 00:56:38.614 couldn't ask tough questions, but

NOTE Confidence: 0.9506021

00:56:38.614 --> 00:56:39.734 I we might have a

NOTE Confidence: 0.9506021

00:56:39.734 --> 00:56:40.934 few few minutes for questions.

NOTE Confidence: 0.9506021

00:56:40.934 --> 00:56:41.974 Sorry, Stephanie, if I went

NOTE Confidence: 0.9506021

00:56:41.974 --> 00:56:42.954 over a little bit.