

WEBVTT

NOTE duration: "01:04:05.404"

NOTE Confidence: 0.95416546

00:00:00.240 --> 00:00:02.259 Good afternoon, everyone. Hi,

NOTE Confidence: 0.9845562

00:00:02.720 --> 00:00:04.580 and welcome to Grand Rounds.

NOTE Confidence: 0.81194216

00:00:06.480 --> 00:00:08.000 Just gonna mute you there.

NOTE Confidence: 0.81194216

00:00:08.000 --> 00:00:08.320 I think

NOTE Confidence: 0.97429687

00:00:09.440 --> 00:00:10.480 it's a pleasure to welcome

NOTE Confidence: 0.97429687

00:00:10.480 --> 00:00:11.599 you all to Grand Rounds.

NOTE Confidence: 0.97429687

00:00:11.920 --> 00:00:13.119 I hope you're enjoying this

NOTE Confidence: 0.97429687

00:00:13.119 --> 00:00:15.219 nice, sunny, warm weather,

NOTE Confidence: 0.9443123

00:00:16.125 --> 00:00:17.725 and, I hope you'll all

NOTE Confidence: 0.9443123

00:00:17.725 --> 00:00:18.845 enjoy this this shorter week

NOTE Confidence: 0.9443123

00:00:18.845 --> 00:00:20.305 that we have coming up.

NOTE Confidence: 0.95410985

00:00:21.005 --> 00:00:22.125 Next week, we will have

NOTE Confidence: 0.95410985

00:00:22.125 --> 00:00:24.145 Shavana Khan coming from NYU

NOTE Confidence: 0.95410985

00:00:24.204 --> 00:00:25.085 to talk to us about

NOTE Confidence: 0.95410985

00:00:25.085 --> 00:00:25.585 telepsychiatry,
NOTE Confidence: 0.9951072

00:00:26.044 --> 00:00:28.384 particularly legal and regulatory considerations
NOTE Confidence: 0.9803895

00:00:28.685 --> 00:00:29.425 in telepsychiatry.
NOTE Confidence: 0.98869956

00:00:30.310 --> 00:00:31.270 So please do join us
NOTE Confidence: 0.98869956

00:00:31.270 --> 00:00:32.229 in person for that. That
NOTE Confidence: 0.98869956

00:00:32.229 --> 00:00:33.270 will be hosted by Pam
NOTE Confidence: 0.98869956

00:00:33.270 --> 00:00:34.710 Hoffman. As ever, if you
NOTE Confidence: 0.98869956

00:00:34.710 --> 00:00:35.270 would like to,
NOTE Confidence: 0.98725224

00:00:35.909 --> 00:00:37.430 meet with our speaker, do
NOTE Confidence: 0.98725224

00:00:37.430 --> 00:00:39.130 reach out to, Alex.
NOTE Confidence: 0.98164654

00:00:39.670 --> 00:00:40.790 Alex is waving from the
NOTE Confidence: 0.98164654

00:00:40.790 --> 00:00:41.850 back. Thank you, Alex.
NOTE Confidence: 0.99893165

00:00:42.629 --> 00:00:43.590 To try and set up
NOTE Confidence: 0.99893165

00:00:43.590 --> 00:00:44.629 a time to meet with
NOTE Confidence: 0.99893165

00:00:44.629 --> 00:00:45.290 our speaker.
NOTE Confidence: 0.9094229

00:00:45.645 --> 00:00:47.004 And today, we have one

NOTE Confidence: 0.9094229

00:00:47.004 --> 00:00:48.125 of our own, and we're

NOTE Confidence: 0.9094229

00:00:48.125 --> 00:00:49.565 delighted that Wanling Zhang will

NOTE Confidence: 0.9094229

00:00:49.565 --> 00:00:50.945 be giving us grand rounds,

NOTE Confidence: 0.99852514

00:00:51.565 --> 00:00:52.065 today.

NOTE Confidence: 0.9770901

00:00:52.524 --> 00:00:54.125 You'll all know Wanling and

NOTE Confidence: 0.9770901

00:00:54.125 --> 00:00:56.364 the incredibly innovative research program

NOTE Confidence: 0.9770901

00:00:56.364 --> 00:00:57.985 that she's developed around irritability

NOTE Confidence: 0.9770901

00:00:58.204 --> 00:00:59.580 that we will hear about

NOTE Confidence: 0.9770901

00:00:59.580 --> 00:01:00.080 today.

NOTE Confidence: 0.97368014

00:01:00.540 --> 00:01:02.620 Wanling completed her PhD in

NOTE Confidence: 0.97368014

00:01:02.620 --> 00:01:04.060 the Institute of Child Development

NOTE Confidence: 0.97368014

00:01:04.060 --> 00:01:05.520 at the University of Minnesota,

NOTE Confidence: 0.9448757

00:01:05.980 --> 00:01:07.840 followed by postdoctoral training,

NOTE Confidence: 0.9925504

00:01:08.220 --> 00:01:09.040 at the NIMH,

NOTE Confidence: 0.9933743

00:01:09.660 --> 00:01:11.100 and then joined the faculty

NOTE Confidence: 0.9933743

00:01:11.100 --> 00:01:12.640 here in twenty nineteen.
NOTE Confidence: 0.89379454

00:01:13.725 --> 00:01:15.185 Walling has published extensively,
NOTE Confidence: 0.9829809

00:01:15.485 --> 00:01:17.165 has been honored with numerous
NOTE Confidence: 0.9829809

00:01:17.165 --> 00:01:18.865 recognitions and awards from various,
NOTE Confidence: 0.92840683

00:01:19.565 --> 00:01:20.065 organizations.
NOTE Confidence: 0.9791622

00:01:20.605 --> 00:01:21.645 And I think one to
NOTE Confidence: 0.9791622

00:01:21.645 --> 00:01:23.565 highlight is from NIH itself,
NOTE Confidence: 0.95176643

00:01:24.045 --> 00:01:25.005 as a recipient of a
NOTE Confidence: 0.95176643

00:01:25.005 --> 00:01:26.610 DP two. So a director's
NOTE Confidence: 0.95176643

00:01:26.610 --> 00:01:28.469 award for early career investigators,
NOTE Confidence: 0.9228559

00:01:29.090 --> 00:01:30.689 really engaging and truly innovative
NOTE Confidence: 0.9228559

00:01:30.689 --> 00:01:31.170 and,
NOTE Confidence: 0.9281294

00:01:31.810 --> 00:01:33.810 advancing the science of, mental
NOTE Confidence: 0.9281294

00:01:33.810 --> 00:01:35.569 health research. So we're looking
NOTE Confidence: 0.9281294

00:01:35.569 --> 00:01:36.850 forward and wel to welcoming
NOTE Confidence: 0.9281294

00:01:36.850 --> 00:01:38.289 Wanling for Grand Rounds today.

NOTE Confidence: 0.9281294

00:01:38.289 --> 00:01:39.509 Thank you. Thank you, Kieran.

NOTE Confidence: 0.94284177

00:01:42.555 --> 00:01:44.314 Yeah. I wanna thank, Kieran

NOTE Confidence: 0.94284177

00:01:44.314 --> 00:01:46.235 for the wonderful introduction and

NOTE Confidence: 0.94284177

00:01:46.235 --> 00:01:47.835 the Grand Rounds committee for

NOTE Confidence: 0.94284177

00:01:47.835 --> 00:01:49.435 inviting me to, give the

NOTE Confidence: 0.94284177

00:01:49.435 --> 00:01:51.034 Grand Rounds talk. And I

NOTE Confidence: 0.94284177

00:01:51.034 --> 00:01:52.555 realized that I was looking

NOTE Confidence: 0.94284177

00:01:52.555 --> 00:01:53.914 at preparing my slide and

NOTE Confidence: 0.94284177

00:01:53.914 --> 00:01:55.034 looking back to the last

NOTE Confidence: 0.94284177

00:01:55.034 --> 00:01:56.015 time that I gave

NOTE Confidence: 0.69978493

00:01:56.470 --> 00:01:56.970 Rembrandt,

NOTE Confidence: 0.9846223

00:01:57.590 --> 00:01:58.869 and it was right before

NOTE Confidence: 0.9846223

00:01:58.869 --> 00:02:00.630 COVID hit. So March twenty

NOTE Confidence: 0.9846223

00:02:00.630 --> 00:02:02.070 twenty. So it's been a

NOTE Confidence: 0.9846223

00:02:02.070 --> 00:02:03.670 while. And the last time

NOTE Confidence: 0.9846223

00:02:03.670 --> 00:02:04.630 I did it, it was
NOTE Confidence: 0.9846223

00:02:04.630 --> 00:02:05.930 a year after
NOTE Confidence: 0.97142667

00:02:06.310 --> 00:02:08.230 I started my faculty position
NOTE Confidence: 0.97142667

00:02:08.230 --> 00:02:08.730 here.
NOTE Confidence: 0.9851214

00:02:09.264 --> 00:02:10.785 And so can't believe that
NOTE Confidence: 0.9851214

00:02:10.785 --> 00:02:11.905 I've been here for seven
NOTE Confidence: 0.9851214

00:02:11.905 --> 00:02:13.185 years. And so there's a
NOTE Confidence: 0.9851214

00:02:13.185 --> 00:02:14.645 lot to share with you
NOTE Confidence: 0.9851214

00:02:14.705 --> 00:02:15.905 about the work that we
NOTE Confidence: 0.9851214

00:02:15.905 --> 00:02:17.025 have been doing in my
NOTE Confidence: 0.9851214

00:02:17.025 --> 00:02:19.264 lab, since then. Yeah. So
NOTE Confidence: 0.9851214

00:02:19.264 --> 00:02:20.405 thank you for the invitation.
NOTE Confidence: 0.97295433

00:02:21.130 --> 00:02:22.330 And the title of my
NOTE Confidence: 0.97295433

00:02:22.330 --> 00:02:24.030 talk today is, irritability,
NOTE Confidence: 0.9594801

00:02:24.410 --> 00:02:26.250 a hidden driver of youth
NOTE Confidence: 0.9594801

00:02:26.250 --> 00:02:27.630 mental health problem.

NOTE Confidence: 0.9716297

00:02:28.250 --> 00:02:30.169 And why hidden driver? It's

NOTE Confidence: 0.9716297

00:02:30.169 --> 00:02:32.590 because irritability is an early

NOTE Confidence: 0.9716297

00:02:32.730 --> 00:02:33.230 indicator,

NOTE Confidence: 0.97793984

00:02:34.655 --> 00:02:35.715 of later psychopathology,

NOTE Confidence: 0.97326326

00:02:36.495 --> 00:02:38.275 but it's not often recognized,

NOTE Confidence: 0.97326326

00:02:38.495 --> 00:02:38.995 especially

NOTE Confidence: 0.91389596

00:02:39.455 --> 00:02:41.474 not by research attention

NOTE Confidence: 0.9911602

00:02:41.775 --> 00:02:43.075 until very recently.

NOTE Confidence: 0.9942357

00:02:43.775 --> 00:02:45.155 Yeah. And so,

NOTE Confidence: 0.98579633

00:02:45.935 --> 00:02:47.440 I wanted to share with

NOTE Confidence: 0.98579633

00:02:47.440 --> 00:02:48.400 you some of the work

NOTE Confidence: 0.98579633

00:02:48.400 --> 00:02:49.620 that we have been doing

NOTE Confidence: 0.98579633

00:02:49.760 --> 00:02:51.440 on trying to uncover and

NOTE Confidence: 0.98579633

00:02:51.440 --> 00:02:52.340 better understand

NOTE Confidence: 0.9835071

00:02:52.959 --> 00:02:54.500 the mechanism, the symptomatology,

NOTE Confidence: 0.93673944

00:02:55.440 --> 00:02:56.739 and the ideology
NOTE Confidence: 0.9941766

00:02:57.120 --> 00:02:58.020 of irritability.
NOTE Confidence: 0.85199356

00:03:02.875 --> 00:03:03.375 Okay.
NOTE Confidence: 0.92380613

00:03:04.235 --> 00:03:05.435 So if you need the,
NOTE Confidence: 0.92380613

00:03:05.835 --> 00:03:08.075 continuing education credit, and here
NOTE Confidence: 0.92380613

00:03:08.075 --> 00:03:08.895 is the
NOTE Confidence: 0.98000795

00:03:09.435 --> 00:03:10.415 sign in sheet.
NOTE Confidence: 0.9912385

00:03:13.755 --> 00:03:15.435 And here is, what I'm
NOTE Confidence: 0.9912385

00:03:15.435 --> 00:03:17.215 going to cover today. So
NOTE Confidence: 0.9912385

00:03:17.275 --> 00:03:18.780 first, I will tell you
NOTE Confidence: 0.9912385

00:03:18.780 --> 00:03:19.980 about what I mean by
NOTE Confidence: 0.9912385

00:03:19.980 --> 00:03:20.480 irritability
NOTE Confidence: 0.9994731

00:03:20.780 --> 00:03:21.440 in kids
NOTE Confidence: 0.9653083

00:03:21.820 --> 00:03:23.660 and irritability and its public
NOTE Confidence: 0.9653083

00:03:23.660 --> 00:03:25.680 health impact and the developmental
NOTE Confidence: 0.9653083

00:03:25.980 --> 00:03:27.980 trajectory, how it develops over

NOTE Confidence: 0.9653083

00:03:27.980 --> 00:03:28.480 time.

NOTE Confidence: 0.9118244

00:03:29.260 --> 00:03:30.540 And then I'll tell you

NOTE Confidence: 0.9118244

00:03:30.620 --> 00:03:32.300 introduce in this construct of

NOTE Confidence: 0.9118244

00:03:32.300 --> 00:03:33.440 frustrated nonreward,

NOTE Confidence: 0.9863829

00:03:33.740 --> 00:03:35.174 which is just a research

NOTE Confidence: 0.9863829

00:03:35.235 --> 00:03:37.254 term to study frustration.

NOTE Confidence: 0.9390175

00:03:37.875 --> 00:03:40.194 And oftentimes, when we use

NOTE Confidence: 0.9390175

00:03:40.194 --> 00:03:40.694 frustration,

NOTE Confidence: 0.95876974

00:03:41.474 --> 00:03:43.314 to design our experiment in

NOTE Confidence: 0.95876974

00:03:43.314 --> 00:03:45.235 our study to probe the

NOTE Confidence: 0.95876974

00:03:45.235 --> 00:03:47.254 underlying mechanisms of irritability.

NOTE Confidence: 0.9985001

00:03:47.810 --> 00:03:48.310 And

NOTE Confidence: 0.9575734

00:03:48.610 --> 00:03:50.050 I'll tell you why and

NOTE Confidence: 0.9575734

00:03:50.050 --> 00:03:50.930 some of the work that

NOTE Confidence: 0.9575734

00:03:50.930 --> 00:03:52.049 we have been doing in

NOTE Confidence: 0.9575734

00:03:52.049 --> 00:03:52.790 that area.
NOTE Confidence: 0.9831227

00:03:54.290 --> 00:03:55.890 And then towards the end,
NOTE Confidence: 0.9831227

00:03:55.890 --> 00:03:57.250 I'll tell you how we
NOTE Confidence: 0.9831227

00:03:57.250 --> 00:03:58.870 translate some of the research
NOTE Confidence: 0.9831227

00:03:58.930 --> 00:03:59.430 finding,
NOTE Confidence: 0.9997985

00:03:59.970 --> 00:04:01.590 in our previous study
NOTE Confidence: 0.9209818

00:04:01.915 --> 00:04:03.995 and use that new, knowledge,
NOTE Confidence: 0.9209818

00:04:03.995 --> 00:04:06.475 especially the neuro mechanism potential
NOTE Confidence: 0.9209818

00:04:06.475 --> 00:04:08.335 neuro mechanism that we identify
NOTE Confidence: 0.93523616

00:04:09.115 --> 00:04:10.875 and, to use a brain
NOTE Confidence: 0.93523616

00:04:10.875 --> 00:04:13.135 stimulation targeting that neuro mechanism
NOTE Confidence: 0.92676836

00:04:13.515 --> 00:04:15.135 to try to reduce irritability.
NOTE Confidence: 0.92676836

00:04:15.435 --> 00:04:16.930 And this is a pilot
NOTE Confidence: 0.92676836

00:04:16.930 --> 00:04:18.870 work that is in collaborations
NOTE Confidence: 0.7632172

00:04:19.250 --> 00:04:20.950 with, doctor Vaughn Steele,
NOTE Confidence: 0.93875784

00:04:21.570 --> 00:04:23.410 in psychiatry and is funded

NOTE Confidence: 0.93875784
00:04:23.410 --> 00:04:23.970 by the,
NOTE Confidence: 0.83518445
00:04:24.450 --> 00:04:26.930 Yale CBMH Center for Brain
NOTE Confidence: 0.83518445
00:04:26.930 --> 00:04:27.910 and Mind Health.
NOTE Confidence: 0.7065389
00:04:29.970 --> 00:04:30.470 K?
NOTE Confidence: 0.9873121
00:04:31.175 --> 00:04:32.135 So what do I mean
NOTE Confidence: 0.9873121
00:04:32.135 --> 00:04:34.295 by irritability in youth? So
NOTE Confidence: 0.9873121
00:04:34.295 --> 00:04:35.335 we see irritability
NOTE Confidence: 0.91274536
00:04:35.815 --> 00:04:36.475 oh, sorry.
NOTE Confidence: 0.98911965
00:04:36.855 --> 00:04:38.775 We see irritability as having
NOTE Confidence: 0.98911965
00:04:38.775 --> 00:04:39.515 two components.
NOTE Confidence: 0.94874936
00:04:40.055 --> 00:04:41.835 So one is temper outburst,
NOTE Confidence: 0.94874936
00:04:41.975 --> 00:04:43.495 and this could range from
NOTE Confidence: 0.94874936
00:04:43.495 --> 00:04:45.630 mild outburst such as huffing
NOTE Confidence: 0.94874936
00:04:45.630 --> 00:04:47.810 and puffing, snapping, arguing,
NOTE Confidence: 0.96267873
00:04:48.190 --> 00:04:49.009 name calling,
NOTE Confidence: 0.9849601

00:04:49.790 --> 00:04:51.630 to moderate outbursts such as
NOTE Confidence: 0.9849601

00:04:51.630 --> 00:04:52.770 yelling, screaming,
NOTE Confidence: 0.9743445

00:04:53.070 --> 00:04:55.070 physical displays of anger such
NOTE Confidence: 0.9743445

00:04:55.070 --> 00:04:56.289 as clenching fist,
NOTE Confidence: 0.84320796

00:04:56.830 --> 00:04:58.930 improper misuse or destruction,
NOTE Confidence: 0.9993529

00:04:59.789 --> 00:05:00.289 kicking
NOTE Confidence: 0.96633124

00:05:00.634 --> 00:05:02.074 kicking the wall or,
NOTE Confidence: 0.8728541

00:05:02.555 --> 00:05:04.414 breaking things, throwing things,
NOTE Confidence: 0.961695

00:05:04.875 --> 00:05:07.134 to verbal and physical threats,
NOTE Confidence: 0.95658034

00:05:07.995 --> 00:05:09.115 and all the way to
NOTE Confidence: 0.95658034

00:05:09.115 --> 00:05:11.514 severe outbursts. So including things
NOTE Confidence: 0.95658034

00:05:11.514 --> 00:05:13.755 like hitting, shopping, getting into
NOTE Confidence: 0.95658034

00:05:13.755 --> 00:05:14.895 fights, pushing,
NOTE Confidence: 0.98465395

00:05:15.195 --> 00:05:17.350 physical aggression to self and
NOTE Confidence: 0.98465395

00:05:17.350 --> 00:05:18.089 to others.
NOTE Confidence: 0.9631719

00:05:18.550 --> 00:05:19.430 And some parents,

NOTE Confidence: 0.9846273
00:05:19.830 --> 00:05:21.190 tell us that their kids
NOTE Confidence: 0.9846273
00:05:21.190 --> 00:05:22.310 try to jump out of
NOTE Confidence: 0.9846273
00:05:22.310 --> 00:05:23.370 a moving vehicle,
NOTE Confidence: 0.9090793
00:05:23.830 --> 00:05:24.810 yeah, on the road,
NOTE Confidence: 0.9859364
00:05:25.270 --> 00:05:26.089 or repeated
NOTE Confidence: 0.80316716
00:05:26.550 --> 00:05:27.529 property destruction,
NOTE Confidence: 0.98970413
00:05:28.230 --> 00:05:29.450 kicking the wall continuously,
NOTE Confidence: 0.97209775
00:05:30.310 --> 00:05:31.565 to try to break it,
NOTE Confidence: 0.97209775
00:05:31.625 --> 00:05:33.085 or smashing objects,
NOTE Confidence: 0.99725914
00:05:33.705 --> 00:05:35.245 to try to break them.
NOTE Confidence: 0.9938558
00:05:36.664 --> 00:05:38.505 And the other component of
NOTE Confidence: 0.9938558
00:05:38.505 --> 00:05:39.005 irritability
NOTE Confidence: 0.9986437
00:05:39.384 --> 00:05:40.604 is this underlying
NOTE Confidence: 0.98549163
00:05:40.985 --> 00:05:42.904 negative and irritable mood that
NOTE Confidence: 0.98549163
00:05:42.904 --> 00:05:44.264 is sustained over a long
NOTE Confidence: 0.98549163

00:05:44.264 --> 00:05:45.324 period of time.
NOTE Confidence: 0.998341

00:05:45.740 --> 00:05:47.339 So parents often tell us
NOTE Confidence: 0.998341

00:05:47.339 --> 00:05:48.860 that their irritable kids have
NOTE Confidence: 0.998341

00:05:48.860 --> 00:05:50.860 an underlying mood that is
NOTE Confidence: 0.998341

00:05:50.860 --> 00:05:53.440 easily annoyed, grouchy, grumpy,
NOTE Confidence: 0.99395007

00:05:53.820 --> 00:05:55.200 unhappy, and moody.
NOTE Confidence: 0.9908706

00:05:55.580 --> 00:05:56.620 And so these are the
NOTE Confidence: 0.9908706

00:05:56.620 --> 00:05:58.214 kids that tend to have
NOTE Confidence: 0.9908706

00:05:58.294 --> 00:05:59.915 struggle with frustration tolerance.
NOTE Confidence: 0.97752506

00:06:00.375 --> 00:06:01.735 So any little things can
NOTE Confidence: 0.97752506

00:06:01.735 --> 00:06:03.115 easily set them off,
NOTE Confidence: 0.97444665

00:06:03.415 --> 00:06:05.595 and parents and family members
NOTE Confidence: 0.97444665

00:06:05.654 --> 00:06:07.014 often describe that they have
NOTE Confidence: 0.97444665

00:06:07.014 --> 00:06:08.615 to walk on eggshells at
NOTE Confidence: 0.97444665

00:06:08.615 --> 00:06:10.055 home in order to prevent
NOTE Confidence: 0.97444665

00:06:10.055 --> 00:06:10.875 temper outburst.

NOTE Confidence: 0.9993
00:06:14.190 --> 00:06:15.870 And in research, we can
NOTE Confidence: 0.9993
00:06:15.870 --> 00:06:16.370 conceptualize
NOTE Confidence: 0.9714241
00:06:16.750 --> 00:06:18.850 these two components as basic
NOTE Confidence: 0.9714241
00:06:18.910 --> 00:06:20.850 irritability and tonic irritability.
NOTE Confidence: 0.9847541
00:06:21.390 --> 00:06:22.690 So basic irritability,
NOTE Confidence: 0.9072585
00:06:24.029 --> 00:06:24.770 the peaks
NOTE Confidence: 0.81205535
00:06:25.230 --> 00:06:25.890 up here
NOTE Confidence: 0.8599102
00:06:26.345 --> 00:06:28.745 represents the periodic temper outburst
NOTE Confidence: 0.8599102
00:06:28.745 --> 00:06:29.865 that you that I just
NOTE Confidence: 0.8599102
00:06:29.865 --> 00:06:30.365 described,
NOTE Confidence: 0.9978678
00:06:30.665 --> 00:06:32.044 and the tonic irritability
NOTE Confidence: 0.9981972
00:06:32.665 --> 00:06:34.445 refers to the elevated,
NOTE Confidence: 0.9945813
00:06:35.145 --> 00:06:37.404 irritable mood and negative mood
NOTE Confidence: 0.9945813
00:06:37.464 --> 00:06:38.985 over a sustained period of
NOTE Confidence: 0.9945813
00:06:38.985 --> 00:06:39.485 time.
NOTE Confidence: 0.99785024

00:06:39.950 --> 00:06:41.710 And, it could be over
NOTE Confidence: 0.99785024

00:06:41.710 --> 00:06:43.550 weeks, over months, or over
NOTE Confidence: 0.99785024

00:06:43.550 --> 00:06:44.050 years.
NOTE Confidence: 0.9551984

00:06:45.150 --> 00:06:46.589 And even though these two
NOTE Confidence: 0.9551984

00:06:46.589 --> 00:06:48.450 component are highly correlated
NOTE Confidence: 0.93660146

00:06:48.910 --> 00:06:50.670 and research has shown that
NOTE Confidence: 0.93660146

00:06:50.670 --> 00:06:51.730 they are distinguishable,
NOTE Confidence: 0.8834558

00:06:52.270 --> 00:06:54.135 and they have a distinct
NOTE Confidence: 0.8834558

00:06:54.135 --> 00:06:54.635 correlates
NOTE Confidence: 0.8250825

00:06:55.895 --> 00:06:58.154 behavior and and neuro correlates.
NOTE Confidence: 0.97824883

00:06:58.535 --> 00:06:59.035 And,
NOTE Confidence: 0.9986179

00:07:00.055 --> 00:07:01.175 what has been found is
NOTE Confidence: 0.9986179

00:07:01.175 --> 00:07:02.475 that basic irritability
NOTE Confidence: 0.99735034

00:07:03.095 --> 00:07:04.695 tend to predict or is
NOTE Confidence: 0.99735034

00:07:04.695 --> 00:07:06.154 associated with ADHD
NOTE Confidence: 0.96113014

00:07:06.455 --> 00:07:09.015 symptoms, aggression, conduct problems, and

NOTE Confidence: 0.96113014

00:07:09.015 --> 00:07:10.020 substance use.

NOTE Confidence: 0.99772614

00:07:10.979 --> 00:07:12.360 While tonic irritability

NOTE Confidence: 0.9982338

00:07:12.819 --> 00:07:14.340 tends to predict and is

NOTE Confidence: 0.9982338

00:07:14.340 --> 00:07:16.759 associated with anxiety and depression.

NOTE Confidence: 0.99627686

00:07:20.419 --> 00:07:21.720 And you might be wondering

NOTE Confidence: 0.99627686

00:07:21.780 --> 00:07:22.580 what are some of the

NOTE Confidence: 0.99627686

00:07:22.580 --> 00:07:24.039 common triggers of

NOTE Confidence: 0.9706127

00:07:24.415 --> 00:07:26.355 irritability in kids nowadays.

NOTE Confidence: 0.9056563

00:07:27.375 --> 00:07:28.575 So we ask of these

NOTE Confidence: 0.9056563

00:07:28.575 --> 00:07:30.675 questions in over the family

NOTE Confidence: 0.9056563

00:07:30.735 --> 00:07:32.095 that came through our studies.

NOTE Confidence: 0.9056563

00:07:32.095 --> 00:07:33.455 So right now, we have

NOTE Confidence: 0.9056563

00:07:33.455 --> 00:07:34.735 screened more than hundred and

NOTE Confidence: 0.9056563

00:07:34.735 --> 00:07:35.555 sixty families

NOTE Confidence: 0.88244563

00:07:35.855 --> 00:07:36.975 and with the kids of

NOTE Confidence: 0.88244563

00:07:36.975 --> 00:07:37.695 a to,
NOTE Confidence: 0.9078491

00:07:38.015 --> 00:07:40.035 ages, a to thirteen.
NOTE Confidence: 0.94261765

00:07:40.710 --> 00:07:42.070 And what they mentioned as
NOTE Confidence: 0.94261765

00:07:42.070 --> 00:07:43.750 the most common trigger of
NOTE Confidence: 0.94261765

00:07:43.750 --> 00:07:44.250 irritability
NOTE Confidence: 0.99158835

00:07:44.870 --> 00:07:46.010 is social conflict.
NOTE Confidence: 0.9949851

00:07:46.470 --> 00:07:48.090 So this could be interactions
NOTE Confidence: 0.9949851

00:07:48.230 --> 00:07:48.730 with,
NOTE Confidence: 0.9179591

00:07:49.110 --> 00:07:49.850 their siblings.
NOTE Confidence: 0.9914677

00:07:50.550 --> 00:07:52.230 And so parents often describe
NOTE Confidence: 0.9914677

00:07:52.230 --> 00:07:53.210 that their siblings,
NOTE Confidence: 0.96660775

00:07:54.070 --> 00:07:55.645 annoy the irritable kids to
NOTE Confidence: 0.96660775

00:07:55.645 --> 00:07:56.145 no
NOTE Confidence: 0.60604787

00:07:56.485 --> 00:07:56.985 end,
NOTE Confidence: 0.9517449

00:07:57.324 --> 00:07:58.604 or it could be a
NOTE Confidence: 0.9517449

00:07:58.604 --> 00:08:00.285 problem with peers being made

NOTE Confidence: 0.9517449
00:08:00.285 --> 00:08:02.125 fun of, being teased at
NOTE Confidence: 0.9517449
00:08:02.125 --> 00:08:02.625 school,
NOTE Confidence: 0.9924505
00:08:04.044 --> 00:08:05.965 or adults trying to set
NOTE Confidence: 0.9924505
00:08:05.965 --> 00:08:06.465 limits
NOTE Confidence: 0.9576999
00:08:06.845 --> 00:08:08.685 or placing demand on the
NOTE Confidence: 0.9576999
00:08:08.685 --> 00:08:10.389 kid. So asking them to
NOTE Confidence: 0.9576999
00:08:10.389 --> 00:08:12.389 do chores and asking them
NOTE Confidence: 0.9576999
00:08:12.389 --> 00:08:14.550 to do, to clean clean
NOTE Confidence: 0.9576999
00:08:14.550 --> 00:08:15.669 up at a room, for
NOTE Confidence: 0.9576999
00:08:15.669 --> 00:08:16.169 example.
NOTE Confidence: 0.8064143
00:08:17.750 --> 00:08:19.370 Or frustrated and unreward,
NOTE Confidence: 0.9881996
00:08:19.909 --> 00:08:21.030 when they feel like things
NOTE Confidence: 0.9881996
00:08:21.030 --> 00:08:22.870 don't go their way or
NOTE Confidence: 0.9881996
00:08:22.870 --> 00:08:24.789 things is not going as
NOTE Confidence: 0.9881996
00:08:24.789 --> 00:08:25.245 they planned.
NOTE Confidence: 0.9715219

00:08:27.165 --> 00:08:29.425 Or school stress. So homework
NOTE Confidence: 0.9715219

00:08:29.485 --> 00:08:30.925 is too much, homework is
NOTE Confidence: 0.9715219

00:08:30.925 --> 00:08:33.025 too hard, or when parents
NOTE Confidence: 0.9715219

00:08:33.085 --> 00:08:34.445 ask them to stop playing
NOTE Confidence: 0.9715219

00:08:34.445 --> 00:08:35.804 video games and go do
NOTE Confidence: 0.9715219

00:08:35.804 --> 00:08:36.765 things that they don't like
NOTE Confidence: 0.9715219

00:08:36.765 --> 00:08:37.745 such as homework.
NOTE Confidence: 0.9612299

00:08:39.290 --> 00:08:41.050 Or routine change also commonly
NOTE Confidence: 0.9612299

00:08:41.050 --> 00:08:42.029 trigger irritability.
NOTE Confidence: 0.91190255

00:08:42.889 --> 00:08:43.629 But surprisingly,
NOTE Confidence: 0.97153264

00:08:44.009 --> 00:08:46.110 electronic or video game playing
NOTE Confidence: 0.97153264

00:08:46.250 --> 00:08:47.689 didn't, come up as one
NOTE Confidence: 0.97153264

00:08:47.689 --> 00:08:49.449 of the top reasons even
NOTE Confidence: 0.97153264

00:08:49.449 --> 00:08:51.470 though it's still commonly mentioned.
NOTE Confidence: 0.9719538

00:08:51.915 --> 00:08:53.595 Yeah. So, especially, it's a
NOTE Confidence: 0.9719538

00:08:53.595 --> 00:08:55.355 struggle when parents ask their

NOTE Confidence: 0.9719538
00:08:55.355 --> 00:08:56.815 kids to put away their,
NOTE Confidence: 0.9879778
00:08:57.675 --> 00:08:59.595 devices, put away their video
NOTE Confidence: 0.9879778
00:08:59.595 --> 00:09:00.654 games, and,
NOTE Confidence: 0.9602129
00:09:00.955 --> 00:09:02.154 their kids often throw a
NOTE Confidence: 0.9602129
00:09:02.154 --> 00:09:02.654 bit.
NOTE Confidence: 0.96239895
00:09:03.770 --> 00:09:05.929 And, some other reasons that's,
NOTE Confidence: 0.96239895
00:09:06.250 --> 00:09:08.030 a little less common include,
NOTE Confidence: 0.96239895
00:09:08.330 --> 00:09:10.010 feeling that things are unfair
NOTE Confidence: 0.96239895
00:09:10.010 --> 00:09:12.350 or unjust, sensory overload,
NOTE Confidence: 0.9905991
00:09:12.809 --> 00:09:14.410 or being tired and and
NOTE Confidence: 0.9905991
00:09:14.410 --> 00:09:15.550 hungry, etcetera.
NOTE Confidence: 0.92250156
00:09:18.515 --> 00:09:19.495 And so clinically,
NOTE Confidence: 0.99384737
00:09:19.955 --> 00:09:20.934 we can conceptualize
NOTE Confidence: 0.9961002
00:09:21.315 --> 00:09:21.815 irritability
NOTE Confidence: 0.9929407
00:09:22.195 --> 00:09:24.434 as this increased propensity to
NOTE Confidence: 0.9929407

00:09:24.434 --> 00:09:24.934 experience
NOTE Confidence: 0.9616588

00:09:25.235 --> 00:09:26.375 anger and frustration.
NOTE Confidence: 0.99673617

00:09:27.635 --> 00:09:28.135 And,
NOTE Confidence: 0.999405

00:09:28.515 --> 00:09:29.895 it is often characterized
NOTE Confidence: 0.9575716

00:09:30.434 --> 00:09:33.150 by severe, frequent, and dysregulated
NOTE Confidence: 0.98680794

00:09:33.610 --> 00:09:34.910 developmentally inappropriate
NOTE Confidence: 0.8518702

00:09:35.370 --> 00:09:36.350 temper outburst,
NOTE Confidence: 0.99894774

00:09:36.730 --> 00:09:38.250 and this is often out
NOTE Confidence: 0.99894774

00:09:38.250 --> 00:09:38.990 of proportion
NOTE Confidence: 0.9992861

00:09:39.370 --> 00:09:40.270 to the situation.
NOTE Confidence: 0.9566037

00:09:41.690 --> 00:09:43.230 And as I mentioned earlier,
NOTE Confidence: 0.9566037

00:09:43.290 --> 00:09:44.990 the mood in between outburst
NOTE Confidence: 0.99441403

00:09:45.345 --> 00:09:47.365 is often irritable and negative.
NOTE Confidence: 0.98540497

00:09:49.345 --> 00:09:49.845 And,
NOTE Confidence: 0.997682

00:09:50.385 --> 00:09:52.964 chronic irritability or severe irritability
NOTE Confidence: 0.98806787

00:09:53.345 --> 00:09:54.165 is a hallmark

NOTE Confidence: 0.9976688
00:09:54.785 --> 00:09:55.285 feature
NOTE Confidence: 0.9461033
00:09:55.665 --> 00:09:57.420 of this new DSM five
NOTE Confidence: 0.9461033
00:09:57.579 --> 00:10:00.000 on diagnostic category called disrupted
NOTE Confidence: 0.9461033
00:10:00.059 --> 00:10:00.880 mood dysregulation
NOTE Confidence: 0.906815
00:10:01.260 --> 00:10:02.480 disorder, DMDD.
NOTE Confidence: 0.97967786
00:10:03.179 --> 00:10:04.720 And so it is meant
NOTE Confidence: 0.97967786
00:10:04.860 --> 00:10:06.079 to give this chronically
NOTE Confidence: 0.958619
00:10:06.459 --> 00:10:08.720 irritable kids a diagnostic home.
NOTE Confidence: 0.9678531
00:10:09.579 --> 00:10:11.500 But irritability and anger is
NOTE Confidence: 0.9678531
00:10:11.500 --> 00:10:12.940 also present in many,
NOTE Confidence: 0.97785616
00:10:13.554 --> 00:10:15.475 pediatric conditions in at least
NOTE Confidence: 0.97785616
00:10:15.475 --> 00:10:15.975 twenty,
NOTE Confidence: 0.98270404
00:10:16.434 --> 00:10:17.875 or more conditions in the
NOTE Confidence: 0.98270404
00:10:17.875 --> 00:10:19.015 DSM five.
NOTE Confidence: 0.9346247
00:10:21.795 --> 00:10:22.995 So why do we care
NOTE Confidence: 0.9346247

00:10:22.995 --> 00:10:23.975 about irritability
NOTE Confidence: 0.9619828

00:10:24.355 --> 00:10:26.355 and related constructs such as
NOTE Confidence: 0.9619828

00:10:26.355 --> 00:10:27.495 anger and aggression?
NOTE Confidence: 0.9885691

00:10:28.640 --> 00:10:30.000 So we care about it
NOTE Confidence: 0.9885691

00:10:30.000 --> 00:10:31.520 because it is very common.
NOTE Confidence: 0.9885691

00:10:31.520 --> 00:10:32.880 It affects about three to
NOTE Confidence: 0.9885691

00:10:32.880 --> 00:10:34.720 five percent of youth, and
NOTE Confidence: 0.9885691

00:10:34.720 --> 00:10:36.320 it accounts for up to
NOTE Confidence: 0.9885691

00:10:36.320 --> 00:10:38.660 seventy five percent inpatient admission.
NOTE Confidence: 0.88774717

00:10:39.440 --> 00:10:40.420 And and
NOTE Confidence: 0.96999615

00:10:40.800 --> 00:10:42.605 about sixty percent of outpatient
NOTE Confidence: 0.9305134

00:10:42.985 --> 00:10:44.365 treatment seeking cases,
NOTE Confidence: 0.93707687

00:10:44.825 --> 00:10:46.845 irritability is mentioned as the,
NOTE Confidence: 0.9720799

00:10:47.225 --> 00:10:48.125 top problem.
NOTE Confidence: 0.9944078

00:10:49.945 --> 00:10:51.725 And as I mentioned, irritability
NOTE Confidence: 0.9944078

00:10:51.945 --> 00:10:52.684 is transdiagnostic.

NOTE Confidence: 0.9734957

00:10:53.385 --> 00:10:54.940 It's present in many pediatric

NOTE Confidence: 0.9734957

00:10:55.160 --> 00:10:56.780 disorder, including DMDD,

NOTE Confidence: 0.98942643

00:10:57.240 --> 00:10:59.020 oppositional defiant disorder,

NOTE Confidence: 0.98217535

00:10:59.800 --> 00:11:02.860 ODD, autism, and anxiety, ADHD,

NOTE Confidence: 0.98217535

00:11:03.000 --> 00:11:03.660 and depression.

NOTE Confidence: 0.7241009

00:11:06.195 --> 00:11:07.075 And your high,

NOTE Confidence: 0.99148625

00:11:08.595 --> 00:11:10.434 levels of irritability has been

NOTE Confidence: 0.99148625

00:11:10.434 --> 00:11:12.055 found to be highly impairing.

NOTE Confidence: 0.99148625

00:11:12.195 --> 00:11:14.115 It's associated with high rates

NOTE Confidence: 0.99148625

00:11:14.115 --> 00:11:14.934 of hospitalization,

NOTE Confidence: 0.9543785

00:11:15.715 --> 00:11:17.955 school suspension, service use, as

NOTE Confidence: 0.9543785

00:11:17.955 --> 00:11:19.175 well as psychotropic

NOTE Confidence: 0.9263176

00:11:20.240 --> 00:11:22.339 pick, medications to manage irritability.

NOTE Confidence: 0.9557869

00:11:26.240 --> 00:11:28.080 And research has also shown

NOTE Confidence: 0.9557869

00:11:28.080 --> 00:11:29.540 that early irritability,

NOTE Confidence: 0.99702275

00:11:30.640 --> 00:11:31.920 as early as could be
NOTE Confidence: 0.99702275

00:11:31.920 --> 00:11:34.020 identified in preschool age
NOTE Confidence: 0.9782592

00:11:34.615 --> 00:11:36.455 is a robust predictor of
NOTE Confidence: 0.9782592

00:11:36.455 --> 00:11:38.235 later anxiety and depression,
NOTE Confidence: 0.9723394

00:11:38.695 --> 00:11:40.075 as well as suicidality.
NOTE Confidence: 0.9721346

00:11:41.095 --> 00:11:42.934 And this is even after
NOTE Confidence: 0.9721346

00:11:42.934 --> 00:11:45.675 controlling for overall depressive symptoms
NOTE Confidence: 0.9721346

00:11:45.735 --> 00:11:46.554 and irritability
NOTE Confidence: 0.9619922

00:11:46.934 --> 00:11:48.990 remain a robust predictor of
NOTE Confidence: 0.9619922

00:11:49.070 --> 00:11:49.570 suicidality,
NOTE Confidence: 0.98717636

00:11:50.190 --> 00:11:51.550 and it often leads to
NOTE Confidence: 0.98717636

00:11:51.550 --> 00:11:53.890 lower income and educational attainment
NOTE Confidence: 0.98717636

00:11:54.110 --> 00:11:55.010 in adulthood.
NOTE Confidence: 0.99330425

00:11:58.510 --> 00:11:59.330 And so,
NOTE Confidence: 0.9799894

00:12:00.029 --> 00:12:01.149 I wanted to tell you
NOTE Confidence: 0.9799894

00:12:01.149 --> 00:12:02.750 some of the developmental research

NOTE Confidence: 0.9799894
00:12:02.750 --> 00:12:04.355 that has been published and
NOTE Confidence: 0.9799894
00:12:04.355 --> 00:12:05.714 also the approach that we
NOTE Confidence: 0.9799894
00:12:05.714 --> 00:12:07.175 are taking in our lab,
NOTE Confidence: 0.9799894
00:12:07.235 --> 00:12:08.694 which is, to
NOTE Confidence: 0.9995715
00:12:09.235 --> 00:12:09.735 follow
NOTE Confidence: 0.94186044
00:12:10.194 --> 00:12:11.954 your ability over a long
NOTE Confidence: 0.94186044
00:12:11.954 --> 00:12:13.795 period of time in order
NOTE Confidence: 0.94186044
00:12:13.795 --> 00:12:15.175 to gain a full picture
NOTE Confidence: 0.94186044
00:12:15.235 --> 00:12:17.670 of the the develop developmental
NOTE Confidence: 0.94186044
00:12:17.890 --> 00:12:20.470 trajectory because a single snapshot
NOTE Confidence: 0.94186044
00:12:20.610 --> 00:12:22.130 of assessment at one single
NOTE Confidence: 0.94186044
00:12:22.130 --> 00:12:23.910 time point is not adequate
NOTE Confidence: 0.97861826
00:12:24.370 --> 00:12:25.809 to capture the full,
NOTE Confidence: 0.99836814
00:12:26.209 --> 00:12:26.709 picture.
NOTE Confidence: 0.99214333
00:12:27.970 --> 00:12:29.565 And so in this study
NOTE Confidence: 0.99214333

00:12:29.565 --> 00:12:30.545 that's published,
NOTE Confidence: 0.9951563

00:12:31.085 --> 00:12:32.684 using a sample of over
NOTE Confidence: 0.9951563

00:12:32.684 --> 00:12:34.045 four thousand kids in the
NOTE Confidence: 0.9951563

00:12:34.045 --> 00:12:34.545 US,
NOTE Confidence: 0.97004205

00:12:35.245 --> 00:12:37.005 of kids that follow from
NOTE Confidence: 0.97004205

00:12:37.005 --> 00:12:39.025 age three to age fifteen,
NOTE Confidence: 0.9400474

00:12:39.804 --> 00:12:41.565 so they identified that kids
NOTE Confidence: 0.9400474

00:12:41.565 --> 00:12:43.665 follow different irritability trajectory.
NOTE Confidence: 0.95991987

00:12:44.540 --> 00:12:46.399 And so about fourteen percent
NOTE Confidence: 0.95991987

00:12:46.459 --> 00:12:47.200 show this,
NOTE Confidence: 0.99734414

00:12:48.059 --> 00:12:50.800 high and relatively stable irritability
NOTE Confidence: 0.9957449

00:12:51.179 --> 00:12:52.000 over time
NOTE Confidence: 0.95139706

00:12:52.459 --> 00:12:54.059 and from early childhood all
NOTE Confidence: 0.95139706

00:12:54.059 --> 00:12:54.959 the way to adolescence.
NOTE Confidence: 0.99239504

00:12:55.755 --> 00:12:57.295 And, of course, the majority
NOTE Confidence: 0.9766846

00:12:57.595 --> 00:12:59.035 of the kids follow this

NOTE Confidence: 0.9766846
00:12:59.035 --> 00:13:00.955 low low trajectory over time.
NOTE Confidence: 0.9766846
00:13:00.955 --> 00:13:02.395 So this is about sixty
NOTE Confidence: 0.9766846
00:13:02.395 --> 00:13:04.075 percent of the sample, and
NOTE Confidence: 0.9766846
00:13:04.075 --> 00:13:05.434 this is a relatively high
NOTE Confidence: 0.9766846
00:13:05.434 --> 00:13:06.415 risk group.
NOTE Confidence: 0.9967687
00:13:07.115 --> 00:13:09.275 And similar trajectory has been
NOTE Confidence: 0.9967687
00:13:09.275 --> 00:13:11.730 identified in another sample in
NOTE Confidence: 0.9967687
00:13:11.809 --> 00:13:12.309 Canada
NOTE Confidence: 0.98597544
00:13:12.690 --> 00:13:14.470 of over a thousand kids,
NOTE Confidence: 0.9969255
00:13:15.089 --> 00:13:16.370 follow from the age of
NOTE Confidence: 0.9969255
00:13:16.370 --> 00:13:17.750 six to age twelve.
NOTE Confidence: 0.9728522
00:13:18.130 --> 00:13:19.730 And, again, there is this
NOTE Confidence: 0.9728522
00:13:19.730 --> 00:13:21.510 group that show persistently
NOTE Confidence: 0.99476135
00:13:21.970 --> 00:13:22.709 high irritability
NOTE Confidence: 0.9422903
00:13:23.250 --> 00:13:25.010 over time, and that makes
NOTE Confidence: 0.9422903

00:13:25.010 --> 00:13:26.449 up about five percent of
NOTE Confidence: 0.9422903

00:13:26.449 --> 00:13:27.350 the sample.
NOTE Confidence: 0.99946356

00:13:27.885 --> 00:13:28.625 But the
NOTE Confidence: 0.9551769

00:13:29.005 --> 00:13:30.865 majority, has low irritability,
NOTE Confidence: 0.9582717

00:13:31.165 --> 00:13:33.245 about seventy four percent. But
NOTE Confidence: 0.9582717

00:13:33.245 --> 00:13:34.445 there are some kids that
NOTE Confidence: 0.9582717

00:13:34.445 --> 00:13:36.465 started out having high irritability
NOTE Confidence: 0.90144396

00:13:36.845 --> 00:13:38.225 that gradually decline,
NOTE Confidence: 0.9853249

00:13:38.684 --> 00:13:40.045 as well as other kids
NOTE Confidence: 0.9853249

00:13:40.045 --> 00:13:41.630 that started out having low
NOTE Confidence: 0.9853249

00:13:41.630 --> 00:13:43.809 irritability that gradually increase.
NOTE Confidence: 0.9947817

00:13:44.429 --> 00:13:45.550 And so this is a
NOTE Confidence: 0.9947817

00:13:45.550 --> 00:13:47.649 common pattern that has been,
NOTE Confidence: 0.9608353

00:13:48.110 --> 00:13:49.949 replicated in an even larger
NOTE Confidence: 0.9608353

00:13:49.949 --> 00:13:51.230 sample. So you can see
NOTE Confidence: 0.9608353

00:13:51.230 --> 00:13:53.410 that it's across multiple sample

NOTE Confidence: 0.9800478
00:13:53.875 --> 00:13:55.955 and across different countries and
NOTE Confidence: 0.9800478
00:13:55.955 --> 00:13:57.095 potentially culture.
NOTE Confidence: 0.9738805
00:13:57.715 --> 00:13:59.075 And so what is seen
NOTE Confidence: 0.9738805
00:13:59.075 --> 00:14:00.595 here in this u UK
NOTE Confidence: 0.9738805
00:14:00.595 --> 00:14:02.755 sample of close to eight
NOTE Confidence: 0.9738805
00:14:02.755 --> 00:14:03.735 thousand kids,
NOTE Confidence: 0.96307576
00:14:04.115 --> 00:14:05.715 about two point four percent
NOTE Confidence: 0.96307576
00:14:05.715 --> 00:14:06.934 has a high,
NOTE Confidence: 0.99218845
00:14:07.750 --> 00:14:09.850 stable irritability over time.
NOTE Confidence: 0.973413
00:14:10.230 --> 00:14:11.670 And this tend to be
NOTE Confidence: 0.973413
00:14:11.670 --> 00:14:12.170 boys,
NOTE Confidence: 0.9964357
00:14:12.630 --> 00:14:14.470 and, they also tend to
NOTE Confidence: 0.9964357
00:14:14.470 --> 00:14:16.170 have an ADHD diagnosis.
NOTE Confidence: 0.9988019
00:14:17.429 --> 00:14:19.430 And what's interesting in this
NOTE Confidence: 0.9988019
00:14:19.430 --> 00:14:20.970 study is this group
NOTE Confidence: 0.9809023

00:14:22.035 --> 00:14:23.475 that started out having low
NOTE Confidence: 0.9809023

00:14:23.475 --> 00:14:24.755 irritability in early,
NOTE Confidence: 0.6801866

00:14:25.795 --> 00:14:26.295 childhood,
NOTE Confidence: 0.99021345

00:14:27.315 --> 00:14:29.315 but starts to increase up
NOTE Confidence: 0.99021345

00:14:29.315 --> 00:14:30.274 to the level of the
NOTE Confidence: 0.99021345

00:14:30.274 --> 00:14:30.774 chronically
NOTE Confidence: 0.97623026

00:14:31.235 --> 00:14:32.295 irritable kids,
NOTE Confidence: 0.9975589

00:14:33.475 --> 00:14:34.615 by age fifteen.
NOTE Confidence: 0.99867404

00:14:35.000 --> 00:14:35.959 And so this is a
NOTE Confidence: 0.99867404

00:14:35.959 --> 00:14:37.079 group that tend to be
NOTE Confidence: 0.99867404

00:14:37.079 --> 00:14:37.579 girls
NOTE Confidence: 0.92571527

00:14:37.959 --> 00:14:38.360 and,
NOTE Confidence: 0.9932939

00:14:38.760 --> 00:14:40.040 tend to have an early
NOTE Confidence: 0.9932939

00:14:40.040 --> 00:14:41.820 onset of depressive symptoms.
NOTE Confidence: 0.9923025

00:14:42.440 --> 00:14:44.440 Yeah. And so there are
NOTE Confidence: 0.9923025

00:14:44.440 --> 00:14:45.579 different characteristics

NOTE Confidence: 0.97686195

00:14:45.959 --> 00:14:47.500 and correlates associated

NOTE Confidence: 0.8246027

00:14:47.959 --> 00:14:48.390 with different, developmental trajectories of

NOTE Confidence: 0.8246027

00:14:48.390 --> 00:14:48.421 kids. So this goes to

NOTE Confidence: 0.8246027

00:14:48.421 --> 00:14:49.019 show that it is important

NOTE Confidence: 0.8441076

00:14:51.315 --> 00:14:52.095 trajectories of kids. So this

NOTE Confidence: 0.8441076

00:14:52.095 --> 00:14:53.195 goes to show that it

NOTE Confidence: 0.8441076

00:14:53.195 --> 00:14:53.895 is important

NOTE Confidence: 0.9183124

00:14:54.274 --> 00:14:54.855 to try to,

NOTE Confidence: 0.86412

00:14:55.875 --> 00:14:57.415 follow kids up longitudinally

NOTE Confidence: 0.85015374

00:14:57.955 --> 00:14:59.475 to see how they fare

NOTE Confidence: 0.85015374

00:14:59.475 --> 00:15:01.095 and how the symptom changes

NOTE Confidence: 0.8302565

00:15:01.395 --> 00:15:03.395 because the different trajectories may

NOTE Confidence: 0.8302565

00:15:03.395 --> 00:15:03.810 have,

NOTE Confidence: 0.9668342

00:15:04.770 --> 00:15:07.010 different underlying mechanism that may

NOTE Confidence: 0.9668342

00:15:07.010 --> 00:15:08.850 need on different sort of

NOTE Confidence: 0.9668342

00:15:08.850 --> 00:15:10.790 intervention and prevention strategy

NOTE Confidence: 0.97011954

00:15:11.410 --> 00:15:12.790 to promote better outcome.

NOTE Confidence: 0.96182746

00:15:14.450 --> 00:15:16.050 K? And so that is

NOTE Confidence: 0.96182746

00:15:16.050 --> 00:15:17.650 indeed the approach that we're

NOTE Confidence: 0.96182746

00:15:17.650 --> 00:15:19.325 taking in my lab on

NOTE Confidence: 0.96182746

00:15:19.325 --> 00:15:20.685 where we are conducting a

NOTE Confidence: 0.96182746

00:15:20.685 --> 00:15:22.685 longitudinal study to try to

NOTE Confidence: 0.96182746

00:15:22.685 --> 00:15:23.985 map out the irritability

NOTE Confidence: 0.9983391

00:15:24.365 --> 00:15:25.825 trajectory over time.

NOTE Confidence: 0.9759726

00:15:26.445 --> 00:15:27.885 And what we also wanted

NOTE Confidence: 0.9759726

00:15:27.885 --> 00:15:29.485 to do is to collect

NOTE Confidence: 0.9759726

00:15:29.485 --> 00:15:31.885 data data from multiple levels

NOTE Confidence: 0.9759726

00:15:31.885 --> 00:15:32.625 of analysis,

NOTE Confidence: 0.8609096

00:15:33.400 --> 00:15:35.400 including the brain, to study

NOTE Confidence: 0.8609096

00:15:35.400 --> 00:15:37.180 the neuro mechanisms of irritability.

NOTE Confidence: 0.99915904

00:15:38.040 --> 00:15:39.500 And we also are collecting

NOTE Confidence: 0.99915904
00:15:39.640 --> 00:15:40.140 physiological
NOTE Confidence: 0.98169637
00:15:40.520 --> 00:15:41.960 data, and I'll tell you
NOTE Confidence: 0.98169637
00:15:41.960 --> 00:15:43.480 more about the design and
NOTE Confidence: 0.98169637
00:15:43.480 --> 00:15:45.100 specific assessment later.
NOTE Confidence: 0.9893772
00:15:45.400 --> 00:15:46.780 Yeah. So we are combining
NOTE Confidence: 0.9893772
00:15:46.920 --> 00:15:47.420 brain,
NOTE Confidence: 0.8783454
00:15:48.305 --> 00:15:49.285 physio data,
NOTE Confidence: 0.998677
00:15:49.585 --> 00:15:50.404 and behavior
NOTE Confidence: 0.92003936
00:15:50.865 --> 00:15:52.385 as well as looking into
NOTE Confidence: 0.92003936
00:15:52.385 --> 00:15:53.525 their social functioning
NOTE Confidence: 0.77671826
00:15:54.225 --> 00:15:54.625 and,
NOTE Confidence: 0.9802619
00:15:55.025 --> 00:15:56.545 put this all together in
NOTE Confidence: 0.9802619
00:15:56.545 --> 00:15:57.505 a machine learning,
NOTE Confidence: 0.95630443
00:15:57.904 --> 00:15:59.445 sort of predictive model
NOTE Confidence: 0.9887817
00:16:00.040 --> 00:16:02.120 to hopefully identify some of
NOTE Confidence: 0.9887817

00:16:02.120 --> 00:16:04.200 the most predictive features of
NOTE Confidence: 0.9887817

00:16:04.200 --> 00:16:04.920 the kids,
NOTE Confidence: 0.9936721

00:16:05.320 --> 00:16:06.700 who are on the chronic
NOTE Confidence: 0.9936721

00:16:06.760 --> 00:16:08.060 irritability trajectory.
NOTE Confidence: 0.9792938

00:16:08.440 --> 00:16:09.880 But, of course, we're also
NOTE Confidence: 0.9792938

00:16:09.880 --> 00:16:10.940 interested in,
NOTE Confidence: 0.93816054

00:16:11.400 --> 00:16:13.340 other trajectories. So for example,
NOTE Confidence: 0.93816054

00:16:13.560 --> 00:16:15.855 the, rising trajectory as well
NOTE Confidence: 0.93816054

00:16:15.935 --> 00:16:16.755 as the declining
NOTE Confidence: 0.9609153

00:16:17.375 --> 00:16:17.875 trajectory.
NOTE Confidence: 0.99832416

00:16:18.255 --> 00:16:19.315 Declining trajectory
NOTE Confidence: 0.98659676

00:16:19.935 --> 00:16:21.375 is you can consider it
NOTE Confidence: 0.98659676

00:16:21.375 --> 00:16:23.295 as a resilient group. So
NOTE Confidence: 0.98659676

00:16:23.295 --> 00:16:24.415 we wanted to see whether
NOTE Confidence: 0.98659676

00:16:24.415 --> 00:16:25.154 there are different,
NOTE Confidence: 0.95985425

00:16:25.535 --> 00:16:27.555 sort of predictive feature associated

NOTE Confidence: 0.95985425
00:16:27.855 --> 00:16:30.035 with each, distinct trajectory.
NOTE Confidence: 0.9645533
00:16:30.760 --> 00:16:32.120 And then we can take
NOTE Confidence: 0.9645533
00:16:32.120 --> 00:16:33.959 those knowledge, then we learn
NOTE Confidence: 0.9645533
00:16:33.959 --> 00:16:35.899 from those features to tailor
NOTE Confidence: 0.9986808
00:16:36.440 --> 00:16:37.740 intervention and prevention.
NOTE Confidence: 0.93641573
00:16:40.279 --> 00:16:41.560 And as many of you
NOTE Confidence: 0.93641573
00:16:41.560 --> 00:16:43.399 know, it's very expensive to
NOTE Confidence: 0.93641573
00:16:43.399 --> 00:16:44.459 conduct our neuroimaging
NOTE Confidence: 0.880589
00:16:44.839 --> 00:16:47.025 study. So each scan, at
NOTE Confidence: 0.880589
00:16:47.025 --> 00:16:48.405 least at Yale here,
NOTE Confidence: 0.85605115
00:16:49.505 --> 00:16:50.305 cost over,
NOTE Confidence: 0.961484
00:16:51.105 --> 00:16:52.785 six hundred bucks and for
NOTE Confidence: 0.961484
00:16:52.785 --> 00:16:54.705 an hour scan. And it
NOTE Confidence: 0.961484
00:16:54.705 --> 00:16:56.565 is if we can identify
NOTE Confidence: 0.961484
00:16:56.865 --> 00:16:57.365 other,
NOTE Confidence: 0.9843681

00:16:58.520 --> 00:17:00.440 features from other the levels

NOTE Confidence: 0.9843681

00:17:00.440 --> 00:17:02.040 of analysis outside of the

NOTE Confidence: 0.9843681

00:17:02.040 --> 00:17:03.500 brain that is more predictive

NOTE Confidence: 0.9843681

00:17:03.640 --> 00:17:04.780 than the brain itself,

NOTE Confidence: 0.87479925

00:17:05.240 --> 00:17:06.060 then that would

NOTE Confidence: 0.61553335

00:17:07.640 --> 00:17:08.140 make,

NOTE Confidence: 0.99873954

00:17:08.600 --> 00:17:09.900 our research more

NOTE Confidence: 0.9262282

00:17:10.280 --> 00:17:10.780 economic,

NOTE Confidence: 0.9585161

00:17:11.320 --> 00:17:12.760 to conduct. Right? As well

NOTE Confidence: 0.9585161

00:17:12.760 --> 00:17:15.405 as the, more feasible to

NOTE Confidence: 0.9585161

00:17:15.405 --> 00:17:17.425 sit scale up the intervention.

NOTE Confidence: 0.9897576

00:17:21.805 --> 00:17:23.725 And so I alluded to

NOTE Confidence: 0.9897576

00:17:23.725 --> 00:17:24.225 earlier

NOTE Confidence: 0.9774283

00:17:24.525 --> 00:17:25.885 that we focus on the

NOTE Confidence: 0.9774283

00:17:25.885 --> 00:17:27.105 construct of frustration

NOTE Confidence: 0.95862895

00:17:27.405 --> 00:17:28.730 in many of the studies

NOTE Confidence: 0.95862895

00:17:28.730 --> 00:17:29.630 that we do,

NOTE Confidence: 0.9920538

00:17:29.930 --> 00:17:31.930 and we define frustration as

NOTE Confidence: 0.9920538

00:17:31.930 --> 00:17:32.830 this normative

NOTE Confidence: 0.9060104

00:17:33.369 --> 00:17:35.850 emotional and behavioral response to

NOTE Confidence: 0.9060104

00:17:35.850 --> 00:17:37.470 to block goal attainment.

NOTE Confidence: 0.9614482

00:17:37.850 --> 00:17:38.890 So it is a common

NOTE Confidence: 0.9614482

00:17:38.890 --> 00:17:40.430 emotion that we all feel

NOTE Confidence: 0.9614482

00:17:40.570 --> 00:17:42.090 at at some point in

NOTE Confidence: 0.9614482

00:17:42.090 --> 00:17:42.830 our life.

NOTE Confidence: 0.9912568

00:17:43.335 --> 00:17:44.375 Yeah. But why is it

NOTE Confidence: 0.9912568

00:17:44.375 --> 00:17:45.674 important for irritability?

NOTE Confidence: 0.9733181

00:17:46.455 --> 00:17:48.135 It's because they often struggle.

NOTE Confidence: 0.9733181

00:17:48.135 --> 00:17:50.234 Kids with irritability often struggle,

NOTE Confidence: 0.96541595

00:17:50.695 --> 00:17:52.075 with frustration tolerance.

NOTE Confidence: 0.8951384

00:17:52.934 --> 00:17:54.715 And, we also illustrated

NOTE Confidence: 0.979421

00:17:55.255 --> 00:17:56.955 in our recent studies
NOTE Confidence: 0.9899095

00:17:57.335 --> 00:17:57.835 that
NOTE Confidence: 0.99981827

00:17:58.200 --> 00:17:58.700 frustration
NOTE Confidence: 0.9515786

00:17:59.159 --> 00:18:00.700 emerge as one of the
NOTE Confidence: 0.9515786

00:18:00.919 --> 00:18:03.179 central construct, in the symptomatology
NOTE Confidence: 0.9881624

00:18:03.720 --> 00:18:04.539 of irritability.
NOTE Confidence: 0.9897116

00:18:05.559 --> 00:18:07.640 And, we do so by
NOTE Confidence: 0.9897116

00:18:07.640 --> 00:18:10.460 using EMA data, ecological momentary
NOTE Confidence: 0.9452122

00:18:10.760 --> 00:18:11.260 assessment.
NOTE Confidence: 0.9762573

00:18:11.685 --> 00:18:13.225 So it's like a smartphone
NOTE Confidence: 0.9421708

00:18:13.605 --> 00:18:14.905 based, survey.
NOTE Confidence: 0.9760363

00:18:15.285 --> 00:18:17.625 We have, children and parents
NOTE Confidence: 0.9760363

00:18:17.765 --> 00:18:19.285 install an app on their
NOTE Confidence: 0.9760363

00:18:19.285 --> 00:18:19.785 phone,
NOTE Confidence: 0.9805214

00:18:20.245 --> 00:18:20.745 and,
NOTE Confidence: 0.99838346

00:18:21.365 --> 00:18:23.365 we send them notifications and

NOTE Confidence: 0.99838346
00:18:23.365 --> 00:18:24.805 beeps three times a day
NOTE Confidence: 0.99838346
00:18:24.805 --> 00:18:25.800 for seven days
NOTE Confidence: 0.99241555
00:18:26.200 --> 00:18:27.560 straight to fill out a
NOTE Confidence: 0.99241555
00:18:27.560 --> 00:18:28.780 questionnaire to,
NOTE Confidence: 0.97955734
00:18:29.320 --> 00:18:30.680 so ask ask about the
NOTE Confidence: 0.97955734
00:18:30.680 --> 00:18:31.180 children's,
NOTE Confidence: 0.9598873
00:18:31.560 --> 00:18:33.340 irritability and related symptoms.
NOTE Confidence: 0.9795585
00:18:35.000 --> 00:18:36.780 And we take the data
NOTE Confidence: 0.9795585
00:18:36.840 --> 00:18:38.220 and then put it into
NOTE Confidence: 0.9795585
00:18:38.280 --> 00:18:39.660 a network analysis.
NOTE Confidence: 0.9561385
00:18:40.325 --> 00:18:42.025 And what you see here
NOTE Confidence: 0.9561385
00:18:42.244 --> 00:18:43.545 are the symptom,
NOTE Confidence: 0.8864238
00:18:44.165 --> 00:18:44.665 nodes.
NOTE Confidence: 0.9557078
00:18:45.045 --> 00:18:47.125 So feeling frustrated, feeling that
NOTE Confidence: 0.9557078
00:18:47.125 --> 00:18:49.225 things are unfair, and feeling
NOTE Confidence: 0.9557078

00:18:49.285 --> 00:18:51.545 grouchy and had mood changes
NOTE Confidence: 0.9557078

00:18:51.845 --> 00:18:53.145 or feeling worried.
NOTE Confidence: 0.88430023

00:18:53.845 --> 00:18:55.910 And what emerged as the
NOTE Confidence: 0.88430023

00:18:55.910 --> 00:18:58.010 most central node is this
NOTE Confidence: 0.88430023

00:18:58.070 --> 00:18:59.130 frustration node.
NOTE Confidence: 0.9860113

00:18:59.430 --> 00:19:00.630 And what do I mean
NOTE Confidence: 0.9860113

00:19:00.630 --> 00:19:02.150 by central is that it's
NOTE Confidence: 0.9860113

00:19:02.150 --> 00:19:02.810 the most
NOTE Confidence: 0.58292013

00:19:03.430 --> 00:19:03.930 connected,
NOTE Confidence: 0.9131828

00:19:04.710 --> 00:19:06.070 it's the nodes not most
NOTE Confidence: 0.9131828

00:19:06.070 --> 00:19:08.505 connected to all other symptoms
NOTE Confidence: 0.9131828

00:19:08.645 --> 00:19:09.705 in this network.
NOTE Confidence: 0.88463336

00:19:10.085 --> 00:19:11.065 And so the
NOTE Confidence: 0.974358

00:19:11.445 --> 00:19:13.045 thicker the line is, the
NOTE Confidence: 0.974358

00:19:13.045 --> 00:19:14.345 stronger the connection,
NOTE Confidence: 0.93762535

00:19:15.925 --> 00:19:17.385 between the two nodes.

NOTE Confidence: 0.93234575
00:19:17.765 --> 00:19:19.525 And so frustration is the
NOTE Confidence: 0.93234575
00:19:19.525 --> 00:19:22.005 most central node followed by,
NOTE Confidence: 0.99726886
00:19:22.429 --> 00:19:24.369 feeling that things are unfair.
NOTE Confidence: 0.9775944
00:19:26.030 --> 00:19:28.369 And according to network research,
NOTE Confidence: 0.992334
00:19:28.910 --> 00:19:30.750 the most central node in
NOTE Confidence: 0.992334
00:19:30.750 --> 00:19:32.750 the system is considered to
NOTE Confidence: 0.992334
00:19:32.750 --> 00:19:34.130 be the most influential,
NOTE Confidence: 0.9255565
00:19:35.070 --> 00:19:36.049 sort of construct,
NOTE Confidence: 0.96166784
00:19:37.025 --> 00:19:39.044 that's related to other nodes.
NOTE Confidence: 0.9812185
00:19:39.585 --> 00:19:41.845 And it's also a potential
NOTE Confidence: 0.9922105
00:19:42.145 --> 00:19:44.164 promising target for intervention.
NOTE Confidence: 0.9979823
00:19:44.465 --> 00:19:45.284 So imagine
NOTE Confidence: 0.99326456
00:19:45.744 --> 00:19:47.044 if we have an intervention
NOTE Confidence: 0.99070704
00:19:47.345 --> 00:19:48.085 that target
NOTE Confidence: 0.946906
00:19:48.750 --> 00:19:50.850 frustration improving frustration tolerance,
NOTE Confidence: 0.9988557

00:19:51.390 --> 00:19:51.890 perhaps
NOTE Confidence: 0.97763103

00:19:52.270 --> 00:19:54.030 we can potentially cut off
NOTE Confidence: 0.97763103

00:19:54.030 --> 00:19:55.550 its connection to all the
NOTE Confidence: 0.97763103

00:19:55.550 --> 00:19:56.369 other symptoms
NOTE Confidence: 0.94242144

00:19:56.910 --> 00:19:59.150 and over reduce the overall
NOTE Confidence: 0.94242144

00:19:59.150 --> 00:20:01.090 severe severity of the symptom.
NOTE Confidence: 0.58462155

00:20:04.934 --> 00:20:05.434 K?
NOTE Confidence: 0.9733223

00:20:06.455 --> 00:20:08.475 And we also often refer,
NOTE Confidence: 0.95560193

00:20:09.174 --> 00:20:11.755 frustration to us, frustrated nonreward.
NOTE Confidence: 0.95560193

00:20:11.975 --> 00:20:13.195 So this is a research
NOTE Confidence: 0.95560193

00:20:13.335 --> 00:20:13.835 construct,
NOTE Confidence: 0.99448144

00:20:14.135 --> 00:20:15.655 and it is a study
NOTE Confidence: 0.99448144

00:20:15.655 --> 00:20:17.400 construct in the negative valence
NOTE Confidence: 0.99448144

00:20:17.640 --> 00:20:19.320 system in the research domain
NOTE Confidence: 0.99448144

00:20:19.320 --> 00:20:19.820 criteria
NOTE Confidence: 0.9521328

00:20:20.359 --> 00:20:22.359 put forth by National Institute

NOTE Confidence: 0.9521328
00:20:22.359 --> 00:20:24.200 of Mental Health. And we
NOTE Confidence: 0.9521328
00:20:24.200 --> 00:20:25.660 define frustrated nonreward
NOTE Confidence: 0.9981625
00:20:25.960 --> 00:20:27.820 as an emotional and behavioral
NOTE Confidence: 0.9981625
00:20:28.119 --> 00:20:29.500 response to omission,
NOTE Confidence: 0.9520874
00:20:29.960 --> 00:20:32.040 decrease, or delay of an
NOTE Confidence: 0.9520874
00:20:32.040 --> 00:20:33.100 expected reward.
NOTE Confidence: 0.97800326
00:20:34.225 --> 00:20:35.345 And this is a cross
NOTE Confidence: 0.97800326
00:20:35.345 --> 00:20:35.845 species
NOTE Confidence: 0.74086654
00:20:36.225 --> 00:20:36.725 translational
NOTE Confidence: 0.98912966
00:20:37.265 --> 00:20:39.365 construct that is first defined
NOTE Confidence: 0.98912966
00:20:39.424 --> 00:20:40.164 in rodents,
NOTE Confidence: 0.94152397
00:20:40.625 --> 00:20:42.225 back in nineteen fifty eight
NOTE Confidence: 0.94152397
00:20:42.225 --> 00:20:43.445 by doctor Emsel.
NOTE Confidence: 0.9589406
00:20:44.465 --> 00:20:45.445 And so,
NOTE Confidence: 0.8524774
00:20:47.390 --> 00:20:48.669 he and the lab put
NOTE Confidence: 0.8524774

00:20:48.669 --> 00:20:49.330 the animal,
NOTE Confidence: 0.9554965

00:20:49.869 --> 00:20:52.049 through some conditioning paradigm, instrumen-
tal
NOTE Confidence: 0.9645141

00:20:52.350 --> 00:20:54.429 learning paradigm. And so animals
NOTE Confidence: 0.9645141

00:20:54.429 --> 00:20:56.289 have to perform some action
NOTE Confidence: 0.9645141

00:20:56.350 --> 00:20:58.769 in order to obtain reward,
NOTE Confidence: 0.98199946

00:20:59.325 --> 00:21:00.684 And then they would change
NOTE Confidence: 0.98199946

00:21:00.684 --> 00:21:01.984 the reward schedule,
NOTE Confidence: 0.9538009

00:21:02.924 --> 00:21:03.664 such that,
NOTE Confidence: 0.8579804

00:21:04.445 --> 00:21:06.225 once animal have been conviction,
NOTE Confidence: 0.9858724

00:21:07.005 --> 00:21:09.105 to expect reward, they start
NOTE Confidence: 0.9858724

00:21:09.244 --> 00:21:11.585 withholding reward and omitting reward
NOTE Confidence: 0.9858724

00:21:11.725 --> 00:21:13.505 and to frustrate the animals.
NOTE Confidence: 0.97953117

00:21:16.179 --> 00:21:17.539 And what has been found
NOTE Confidence: 0.97953117

00:21:17.539 --> 00:21:19.140 in animal research is that
NOTE Confidence: 0.97953117

00:21:19.140 --> 00:21:21.400 following frustration or frustrated nonreward,
NOTE Confidence: 0.9332363

00:21:21.779 --> 00:21:23.859 animals tend to show increased
NOTE Confidence: 0.9332363

00:21:23.859 --> 00:21:26.359 motor activities and increased aggression,
NOTE Confidence: 0.9989725

00:21:26.820 --> 00:21:28.065 and this has been
NOTE Confidence: 0.9240688

00:21:28.445 --> 00:21:30.625 replicated in humans as well.
NOTE Confidence: 0.9240688

00:21:30.685 --> 00:21:31.984 And it sort of parallels
NOTE Confidence: 0.9240688

00:21:32.125 --> 00:21:33.565 the temper outburst that we
NOTE Confidence: 0.9240688

00:21:33.565 --> 00:21:35.744 see in irritable kids. Right?
NOTE Confidence: 0.95133466

00:21:39.005 --> 00:21:40.470 And so, historically,
NOTE Confidence: 0.8630589

00:21:41.170 --> 00:21:42.310 FNR research,
NOTE Confidence: 0.81561434

00:21:43.010 --> 00:21:44.630 frustrated non reward research
NOTE Confidence: 0.93434256

00:21:44.930 --> 00:21:46.630 has been conducted in animals.
NOTE Confidence: 0.95558006

00:21:47.090 --> 00:21:48.370 And it is not until
NOTE Confidence: 0.95558006

00:21:48.370 --> 00:21:48.870 recently,
NOTE Confidence: 0.98831254

00:21:49.330 --> 00:21:50.710 there is an upsurge,
NOTE Confidence: 0.9741681

00:21:51.330 --> 00:21:53.810 of frustrated non reward research
NOTE Confidence: 0.9741681

00:21:53.810 --> 00:21:54.550 in humans,

NOTE Confidence: 0.9834654
00:21:55.045 --> 00:21:56.244 but it has not been
NOTE Confidence: 0.9834654
00:21:56.244 --> 00:21:58.025 matched with a similar increase
NOTE Confidence: 0.9978742
00:21:58.484 --> 00:21:59.785 in animal studies.
NOTE Confidence: 0.9915686
00:22:00.885 --> 00:22:01.785 And so,
NOTE Confidence: 0.9684321
00:22:02.165 --> 00:22:03.225 I wanted to,
NOTE Confidence: 0.9949465
00:22:04.165 --> 00:22:04.885 sort of,
NOTE Confidence: 0.92919415
00:22:05.285 --> 00:22:06.565 tell you a study that's
NOTE Confidence: 0.92919415
00:22:06.565 --> 00:22:08.730 conducted by a collaborator,
NOTE Confidence: 0.89118946
00:22:09.109 --> 00:22:10.869 doctor Zheng Li, who's an
NOTE Confidence: 0.89118946
00:22:10.869 --> 00:22:12.009 animal researcher,
NOTE Confidence: 0.9988775
00:22:12.470 --> 00:22:13.769 to try to revive
NOTE Confidence: 0.9863154
00:22:14.070 --> 00:22:15.929 this line of animal work
NOTE Confidence: 0.9863154
00:22:16.070 --> 00:22:17.210 and to collaborate
NOTE Confidence: 0.7271606
00:22:17.669 --> 00:22:19.690 on across species of work,
NOTE Confidence: 0.9995892
00:22:20.230 --> 00:22:21.690 using parallel paradigms
NOTE Confidence: 0.9380216

00:22:21.994 --> 00:22:23.535 to study the neuromechanism
NOTE Confidence: 0.83333576

00:22:24.155 --> 00:22:25.455 of an r FNR.
NOTE Confidence: 0.99294746

00:22:28.395 --> 00:22:30.015 So she and her student,
NOTE Confidence: 0.9172474

00:22:30.555 --> 00:22:32.734 develop a very interesting paradigm,
NOTE Confidence: 0.7316741

00:22:34.075 --> 00:22:35.375 called APRO,
NOTE Confidence: 0.807437

00:22:36.179 --> 00:22:38.440 alternate poking reward omission.
NOTE Confidence: 0.9120592

00:22:38.899 --> 00:22:41.059 So they first, restrict water
NOTE Confidence: 0.9120592

00:22:41.059 --> 00:22:43.059 restrict the mice, and these
NOTE Confidence: 0.9120592

00:22:43.059 --> 00:22:44.419 are mice that's,
NOTE Confidence: 0.95511246

00:22:46.580 --> 00:22:47.940 of human age of ten
NOTE Confidence: 0.95511246

00:22:47.940 --> 00:22:48.679 to fifteen.
NOTE Confidence: 0.98779786

00:22:49.085 --> 00:22:49.484 And,
NOTE Confidence: 0.79386425

00:22:49.885 --> 00:22:51.025 frustrated and unreward
NOTE Confidence: 0.87446094

00:22:52.445 --> 00:22:54.305 animal research in juvenile
NOTE Confidence: 0.9409051

00:22:54.845 --> 00:22:56.845 animals is pretty rare in
NOTE Confidence: 0.9409051

00:22:56.845 --> 00:22:58.845 the past studies. So her

NOTE Confidence: 0.9409051
00:22:58.845 --> 00:23:00.605 study is one of, the
NOTE Confidence: 0.9409051
00:23:00.605 --> 00:23:02.125 few that looked at focus
NOTE Confidence: 0.9409051
00:23:02.125 --> 00:23:02.945 on the juvenile,
NOTE Confidence: 0.9766588
00:23:03.805 --> 00:23:04.305 animals.
NOTE Confidence: 0.9996965
00:23:04.880 --> 00:23:05.380 And
NOTE Confidence: 0.9824243
00:23:05.760 --> 00:23:07.440 so she first trained the
NOTE Confidence: 0.9824243
00:23:07.440 --> 00:23:07.940 animals
NOTE Confidence: 0.6325738
00:23:08.320 --> 00:23:09.140 to perform,
NOTE Confidence: 0.8547634
00:23:10.880 --> 00:23:11.380 behavior
NOTE Confidence: 0.89936537
00:23:11.760 --> 00:23:13.280 to poke in the water
NOTE Confidence: 0.89936537
00:23:13.280 --> 00:23:14.800 spout at the end of
NOTE Confidence: 0.89936537
00:23:14.800 --> 00:23:15.460 a runway.
NOTE Confidence: 0.97207624
00:23:16.160 --> 00:23:17.620 And so, of course, animals
NOTE Confidence: 0.97207624
00:23:17.680 --> 00:23:19.655 were water restricted, so they
NOTE Confidence: 0.97207624
00:23:19.655 --> 00:23:20.395 were motivated
NOTE Confidence: 0.99820536

00:23:20.775 --> 00:23:22.075 to perform the task.
NOTE Confidence: 0.8637416

00:23:22.615 --> 00:23:23.095 And,
NOTE Confidence: 0.9251703

00:23:24.135 --> 00:23:25.835 after three days of training,
NOTE Confidence: 0.9251703

00:23:25.975 --> 00:23:27.494 animals and the row the
NOTE Confidence: 0.9251703

00:23:27.494 --> 00:23:29.355 mice can perform the task
NOTE Confidence: 0.9251703

00:23:29.415 --> 00:23:31.515 at hundred percent success rate.
NOTE Confidence: 0.9368379

00:23:31.900 --> 00:23:33.660 And after that, she start
NOTE Confidence: 0.9368379

00:23:33.660 --> 00:23:34.960 on putting the animals
NOTE Confidence: 0.93976164

00:23:35.420 --> 00:23:37.500 through the APRO paradigm. So
NOTE Confidence: 0.93976164

00:23:37.500 --> 00:23:38.559 on day four,
NOTE Confidence: 0.99277735

00:23:38.859 --> 00:23:39.600 when animal,
NOTE Confidence: 0.98385507

00:23:40.460 --> 00:23:42.400 mice perform the task correctly
NOTE Confidence: 0.945553

00:23:43.260 --> 00:23:45.740 and, they withhold fifty percent
NOTE Confidence: 0.945553

00:23:45.740 --> 00:23:46.640 of the reward.
NOTE Confidence: 0.9871308

00:23:46.955 --> 00:23:47.994 So fifty percent of the
NOTE Confidence: 0.9871308

00:23:47.994 --> 00:23:49.455 time, they withhold reward.

NOTE Confidence: 0.99824685

00:23:49.915 --> 00:23:51.455 And then on day five,

NOTE Confidence: 0.9849398

00:23:51.755 --> 00:23:54.175 the nonreward rate is increased

NOTE Confidence: 0.9849398

00:23:54.315 --> 00:23:55.375 to eighty percent.

NOTE Confidence: 0.9848859

00:23:55.835 --> 00:23:57.755 Yeah. And what they found

NOTE Confidence: 0.9848859

00:23:57.755 --> 00:23:58.494 is that

NOTE Confidence: 0.9591028

00:23:59.035 --> 00:24:00.095 on day four,

NOTE Confidence: 0.8743814

00:24:01.310 --> 00:24:01.810 animals,

NOTE Confidence: 0.9941863

00:24:02.670 --> 00:24:04.350 that the animals that went

NOTE Confidence: 0.9941863

00:24:04.350 --> 00:24:05.650 through the frustration paradigms,

NOTE Confidence: 0.9644184

00:24:06.109 --> 00:24:07.570 which is the,

NOTE Confidence: 0.98749286

00:24:07.950 --> 00:24:08.850 sort of the

NOTE Confidence: 0.9760802

00:24:09.230 --> 00:24:10.990 pink bar here or pink

NOTE Confidence: 0.9760802

00:24:10.990 --> 00:24:12.830 dots here compared to the

NOTE Confidence: 0.9760802

00:24:12.830 --> 00:24:14.430 control mice who has never

NOTE Confidence: 0.9760802

00:24:14.430 --> 00:24:16.835 went through the frustration paradigm.

NOTE Confidence: 0.9760802

00:24:17.055 --> 00:24:18.035 So the frustrated
NOTE Confidence: 0.96528816

00:24:18.494 --> 00:24:20.355 mice, tend to show increased
NOTE Confidence: 0.96528816

00:24:20.415 --> 00:24:22.515 motor activity in terms of
NOTE Confidence: 0.96528816

00:24:22.655 --> 00:24:23.795 visiting the port,
NOTE Confidence: 0.99826604

00:24:24.415 --> 00:24:25.075 more frequently
NOTE Confidence: 0.91900396

00:24:25.535 --> 00:24:26.595 and more times.
NOTE Confidence: 0.94079435

00:24:26.895 --> 00:24:28.435 And they also show increased
NOTE Confidence: 0.94079435

00:24:28.494 --> 00:24:30.015 running speed when they are
NOTE Confidence: 0.94079435

00:24:30.015 --> 00:24:31.660 going between the two different
NOTE Confidence: 0.94079435

00:24:31.799 --> 00:24:32.619 port water,
NOTE Confidence: 0.97341347

00:24:33.559 --> 00:24:34.059 spouts.
NOTE Confidence: 0.95410776

00:24:34.840 --> 00:24:35.340 And,
NOTE Confidence: 0.9772095

00:24:36.200 --> 00:24:38.119 the increased motor activity in
NOTE Confidence: 0.9772095

00:24:38.119 --> 00:24:39.740 terms of a port visit
NOTE Confidence: 0.9772095

00:24:40.039 --> 00:24:40.539 continue,
NOTE Confidence: 0.9621095

00:24:41.320 --> 00:24:42.220 to be suspended

NOTE Confidence: 0.98501843
00:24:42.520 --> 00:24:44.299 and to be high even
NOTE Confidence: 0.98501843
00:24:44.440 --> 00:24:45.984 on day six. So
NOTE Confidence: 0.99443066
00:24:46.525 --> 00:24:47.265 after the,
NOTE Confidence: 0.9989192
00:24:47.645 --> 00:24:48.225 the day
NOTE Confidence: 0.89773697
00:24:48.525 --> 00:24:50.045 after, the the mice had
NOTE Confidence: 0.89773697
00:24:50.045 --> 00:24:50.865 been frustrated.
NOTE Confidence: 0.7945562
00:24:51.645 --> 00:24:52.625 That's the Yeah.
NOTE Confidence: 0.9897593
00:24:54.605 --> 00:24:56.285 The behavior they have to
NOTE Confidence: 0.9897593
00:24:56.285 --> 00:24:56.845 sort of,
NOTE Confidence: 0.99358076
00:24:58.205 --> 00:25:00.445 follow a pattern in terms
NOTE Confidence: 0.99358076
00:25:00.445 --> 00:25:02.070 of left side or right
NOTE Confidence: 0.99358076
00:25:02.070 --> 00:25:02.970 side poking.
NOTE Confidence: 0.98364806
00:25:03.350 --> 00:25:04.890 Yeah. Yeah. There's a schedule
NOTE Confidence: 0.98364806
00:25:05.190 --> 00:25:05.690 pattern.
NOTE Confidence: 0.99819887
00:25:06.390 --> 00:25:06.890 Mhmm.
NOTE Confidence: 0.9905324

00:25:07.590 --> 00:25:08.490 Yeah. Yeah.
NOTE Confidence: 0.9684667

00:25:11.990 --> 00:25:13.510 And they also do, put
NOTE Confidence: 0.9684667

00:25:13.510 --> 00:25:15.030 the animal through a series
NOTE Confidence: 0.9684667

00:25:15.030 --> 00:25:16.515 of tests and to make
NOTE Confidence: 0.9684667

00:25:16.515 --> 00:25:17.715 sure this is not just
NOTE Confidence: 0.9684667

00:25:17.715 --> 00:25:19.635 a fluke. So they put
NOTE Confidence: 0.9684667

00:25:19.635 --> 00:25:21.234 the animal through an open
NOTE Confidence: 0.9684667

00:25:21.234 --> 00:25:22.295 field test,
NOTE Confidence: 0.97834486

00:25:22.835 --> 00:25:24.355 and they this time, they
NOTE Confidence: 0.97834486

00:25:24.355 --> 00:25:26.295 have all three different groups.
NOTE Confidence: 0.97834486

00:25:26.435 --> 00:25:28.195 So one is control, and
NOTE Confidence: 0.97834486

00:25:28.195 --> 00:25:29.395 then they also have a
NOTE Confidence: 0.97834486

00:25:29.395 --> 00:25:30.295 water restricted
NOTE Confidence: 0.74021095

00:25:30.675 --> 00:25:31.175 group,
NOTE Confidence: 0.9898675

00:25:31.570 --> 00:25:33.270 and then the, frustrated
NOTE Confidence: 0.8890765

00:25:33.570 --> 00:25:35.410 or non reward group to

NOTE Confidence: 0.8890765
00:25:35.410 --> 00:25:37.030 rule out on the effect
NOTE Confidence: 0.8890765
00:25:37.250 --> 00:25:38.950 due to a water restriction.
NOTE Confidence: 0.9362184
00:25:39.410 --> 00:25:40.609 Yeah. To show that it
NOTE Confidence: 0.9362184
00:25:40.609 --> 00:25:42.369 is specific to frustrated non
NOTE Confidence: 0.9362184
00:25:42.369 --> 00:25:44.290 reward and not, because of
NOTE Confidence: 0.9362184
00:25:44.290 --> 00:25:45.109 water restriction.
NOTE Confidence: 0.9923377
00:25:45.664 --> 00:25:46.784 So what they found is
NOTE Confidence: 0.9923377
00:25:46.784 --> 00:25:48.244 that when, animals,
NOTE Confidence: 0.99572575
00:25:48.784 --> 00:25:50.385 after being frustrated, when you
NOTE Confidence: 0.99572575
00:25:50.385 --> 00:25:51.585 put them in an open
NOTE Confidence: 0.99572575
00:25:51.585 --> 00:25:52.965 open field test,
NOTE Confidence: 0.9723778
00:25:53.265 --> 00:25:55.024 they tend to travel longer
NOTE Confidence: 0.9723778
00:25:55.024 --> 00:25:56.645 distance around the peripheral.
NOTE Confidence: 0.9943597
00:25:57.505 --> 00:25:58.005 Yeah.
NOTE Confidence: 0.91869575
00:25:58.390 --> 00:25:59.609 Demonstrating here.
NOTE Confidence: 0.9675787

00:26:00.150 --> 00:26:01.429 And this is male, and
NOTE Confidence: 0.9675787

00:26:01.429 --> 00:26:02.710 this is female, and they
NOTE Confidence: 0.9675787

00:26:02.710 --> 00:26:05.030 show very similar pattern. And
NOTE Confidence: 0.9675787

00:26:05.030 --> 00:26:06.309 same here. This is the
NOTE Confidence: 0.9675787

00:26:06.309 --> 00:26:07.130 mice that's,
NOTE Confidence: 0.6374006

00:26:07.510 --> 00:26:08.169 been frustrated.
NOTE Confidence: 0.9839336

00:26:08.950 --> 00:26:09.450 And,
NOTE Confidence: 0.99839425

00:26:09.990 --> 00:26:11.385 and this is
NOTE Confidence: 0.911912

00:26:11.845 --> 00:26:13.525 also this is this is
NOTE Confidence: 0.911912

00:26:13.525 --> 00:26:15.205 male, and that's female. And,
NOTE Confidence: 0.911912

00:26:15.205 --> 00:26:15.705 again,
NOTE Confidence: 0.9925626

00:26:16.244 --> 00:26:18.405 they have, no differences in
NOTE Confidence: 0.9925626

00:26:18.405 --> 00:26:19.705 terms of, their
NOTE Confidence: 0.9302399

00:26:20.085 --> 00:26:22.325 increased motor activity. So both
NOTE Confidence: 0.9302399

00:26:22.325 --> 00:26:24.105 show increase on motor activity
NOTE Confidence: 0.9302399

00:26:24.165 --> 00:26:25.865 in terms of, travel distance.

NOTE Confidence: 0.97878784
00:26:30.859 --> 00:26:32.460 And another test that they
NOTE Confidence: 0.97878784
00:26:32.460 --> 00:26:33.200 put animals
NOTE Confidence: 0.90659904
00:26:33.500 --> 00:26:35.119 through is this residence
NOTE Confidence: 0.8228804
00:26:35.659 --> 00:26:38.000 intruder test where an unfamiliar
NOTE Confidence: 0.985999
00:26:38.380 --> 00:26:40.424 mice, were put into the
NOTE Confidence: 0.985999
00:26:40.424 --> 00:26:42.205 same cage as the frustrated
NOTE Confidence: 0.9724687
00:26:43.065 --> 00:26:44.184 mice. And they found that
NOTE Confidence: 0.9724687
00:26:44.184 --> 00:26:44.345 the,
NOTE Confidence: 0.9898057
00:26:45.065 --> 00:26:47.144 frustrated mice tend to,
NOTE Confidence: 0.9953756
00:26:47.784 --> 00:26:50.024 are quicker to attack the
NOTE Confidence: 0.9953756
00:26:50.024 --> 00:26:50.524 intruders
NOTE Confidence: 0.9536021
00:26:50.984 --> 00:26:52.924 and also attack for
NOTE Confidence: 0.9518497
00:26:53.225 --> 00:26:54.365 a longer duration,
NOTE Confidence: 0.9956744
00:26:54.830 --> 00:26:56.590 and they also attack more
NOTE Confidence: 0.9956744
00:26:56.590 --> 00:26:57.090 often.
NOTE Confidence: 0.9995346

00:26:57.390 --> 00:26:58.830 And this is not simply
NOTE Confidence: 0.9995346

00:26:58.830 --> 00:27:00.050 due to an increased
NOTE Confidence: 0.9703008

00:27:00.590 --> 00:27:01.090 nonaggressive
NOTE Confidence: 0.99301344

00:27:01.630 --> 00:27:04.270 social interaction time. Yeah. So
NOTE Confidence: 0.99301344

00:27:04.270 --> 00:27:06.050 it is specific to aggression
NOTE Confidence: 0.99301344

00:27:06.190 --> 00:27:06.690 behavior.
NOTE Confidence: 0.97890353

00:27:07.494 --> 00:27:08.855 And, again, there's no,
NOTE Confidence: 0.957285

00:27:09.255 --> 00:27:10.154 sex differences.
NOTE Confidence: 0.99452865

00:27:14.774 --> 00:27:16.855 And there's no effect on
NOTE Confidence: 0.99452865

00:27:16.855 --> 00:27:18.695 anxiety. Frustration has no effect
NOTE Confidence: 0.99452865

00:27:18.695 --> 00:27:20.534 on anxiety or depression like
NOTE Confidence: 0.99452865

00:27:20.534 --> 00:27:21.914 symptoms as well.
NOTE Confidence: 0.9242449

00:27:23.369 --> 00:27:24.490 So this seem to be
NOTE Confidence: 0.9242449

00:27:24.490 --> 00:27:26.650 a pretty robust evidence showing
NOTE Confidence: 0.9242449

00:27:26.650 --> 00:27:27.869 that, frustration,
NOTE Confidence: 0.9402725

00:27:28.490 --> 00:27:30.250 may lead to increased motor

NOTE Confidence: 0.9402725

00:27:30.250 --> 00:27:31.630 activity and aggression.

NOTE Confidence: 0.9490566

00:27:32.170 --> 00:27:33.850 And in my later work

NOTE Confidence: 0.9490566

00:27:33.850 --> 00:27:35.930 in in humans, I'll tell

NOTE Confidence: 0.9490566

00:27:35.930 --> 00:27:37.130 you some of the ways

NOTE Confidence: 0.9490566

00:27:37.130 --> 00:27:39.015 that we try to use

NOTE Confidence: 0.9490566

00:27:39.015 --> 00:27:40.935 motor activities as a sort

NOTE Confidence: 0.9490566

00:27:40.935 --> 00:27:41.675 of translational

NOTE Confidence: 0.99651474

00:27:41.975 --> 00:27:42.475 indicators

NOTE Confidence: 0.99921405

00:27:43.015 --> 00:27:43.675 of frustration

NOTE Confidence: 0.9997111

00:27:44.055 --> 00:27:45.195 in our human work.

NOTE Confidence: 0.9994262

00:27:47.815 --> 00:27:48.955 So you can imagine

NOTE Confidence: 0.9626279

00:27:49.335 --> 00:27:51.275 we could design a similar

NOTE Confidence: 0.9626279

00:27:51.540 --> 00:27:53.640 paradigm, right, by first conditioning,

NOTE Confidence: 0.9986594

00:27:55.380 --> 00:27:57.240 humans to expect reward

NOTE Confidence: 0.9536864

00:27:57.619 --> 00:28:00.200 and then start frustrating that

NOTE Confidence: 0.9536864

00:28:00.500 --> 00:28:02.340 frustrating them by taking away,
NOTE Confidence: 0.9536864

00:28:02.500 --> 00:28:03.945 the reward that they expect
NOTE Confidence: 0.96874774

00:28:04.345 --> 00:28:05.005 to receive.
NOTE Confidence: 0.95425403

00:28:05.544 --> 00:28:06.904 And indeed, and that has
NOTE Confidence: 0.95425403

00:28:06.904 --> 00:28:08.184 been what we have been
NOTE Confidence: 0.95425403

00:28:08.184 --> 00:28:09.644 doing in the lab.
NOTE Confidence: 0.9836788

00:28:10.024 --> 00:28:11.544 Yeah. And so we have
NOTE Confidence: 0.9836788

00:28:11.544 --> 00:28:13.705 done this, to induce frustration
NOTE Confidence: 0.9836788

00:28:13.705 --> 00:28:14.984 in the lab, in the
NOTE Confidence: 0.9836788

00:28:14.984 --> 00:28:16.904 clinic, and inside the scanner
NOTE Confidence: 0.9836788

00:28:16.904 --> 00:28:18.105 so that we can study
NOTE Confidence: 0.9836788

00:28:18.105 --> 00:28:18.600 the
NOTE Confidence: 0.99935895

00:28:19.000 --> 00:28:19.500 physiology
NOTE Confidence: 0.81294984

00:28:19.880 --> 00:28:22.299 behavior and, the neuro mechanism
NOTE Confidence: 0.9886343

00:28:22.679 --> 00:28:25.020 before, during, and after frustration.
NOTE Confidence: 0.9689062

00:28:27.240 --> 00:28:28.520 So one of the common

NOTE Confidence: 0.9689062

00:28:28.520 --> 00:28:30.539 paradigms that we use extensively

NOTE Confidence: 0.8941405

00:28:31.000 --> 00:28:32.515 in the past is this

NOTE Confidence: 0.8941405

00:28:32.515 --> 00:28:34.455 paradigm called effective postner,

NOTE Confidence: 0.9453675

00:28:35.075 --> 00:28:35.575 task.

NOTE Confidence: 0.9767535

00:28:36.595 --> 00:28:37.795 And this is a very

NOTE Confidence: 0.9767535

00:28:37.795 --> 00:28:40.275 easy paradigm where participant just

NOTE Confidence: 0.9767535

00:28:40.275 --> 00:28:41.555 have to press a button

NOTE Confidence: 0.9767535

00:28:41.555 --> 00:28:43.575 left or right to identify

NOTE Confidence: 0.9767535

00:28:43.715 --> 00:28:44.455 the target,

NOTE Confidence: 0.9858887

00:28:45.390 --> 00:28:46.050 on here.

NOTE Confidence: 0.9346259

00:28:46.510 --> 00:28:48.590 So the target could be,

NOTE Confidence: 0.9346259

00:28:48.990 --> 00:28:50.750 and then before the target

NOTE Confidence: 0.9346259

00:28:50.750 --> 00:28:52.110 shows up, they would see

NOTE Confidence: 0.9346259

00:28:52.110 --> 00:28:53.950 a blue cue either showing

NOTE Confidence: 0.9346259

00:28:53.950 --> 00:28:55.310 up, on the same side

NOTE Confidence: 0.9346259

00:28:55.310 --> 00:28:56.510 as the target or on
NOTE Confidence: 0.9346259

00:28:56.510 --> 00:28:57.870 the different side of the
NOTE Confidence: 0.9346259

00:28:57.870 --> 00:28:58.370 target
NOTE Confidence: 0.97838545

00:28:58.785 --> 00:29:00.565 to assess attention shifting.
NOTE Confidence: 0.9804239

00:29:01.025 --> 00:29:02.405 And so they have to
NOTE Confidence: 0.9804239

00:29:02.545 --> 00:29:04.145 respond to where the target
NOTE Confidence: 0.9804239

00:29:04.145 --> 00:29:06.085 is. And after they respond,
NOTE Confidence: 0.99060106

00:29:06.465 --> 00:29:08.085 they were given some feedback.
NOTE Confidence: 0.9450726

00:29:08.465 --> 00:29:10.065 And for each trial, they
NOTE Confidence: 0.9450726

00:29:10.065 --> 00:29:12.065 perform correctly. They win fifty
NOTE Confidence: 0.9450726

00:29:12.065 --> 00:29:12.510 cents.
NOTE Confidence: 0.9812192

00:29:12.910 --> 00:29:14.350 And so the task is
NOTE Confidence: 0.9812192

00:29:14.350 --> 00:29:16.190 structured such that the first
NOTE Confidence: 0.9812192

00:29:16.190 --> 00:29:17.390 half of the task is
NOTE Confidence: 0.9812192

00:29:17.390 --> 00:29:19.730 very easy and everybody quickly,
NOTE Confidence: 0.9605476

00:29:20.190 --> 00:29:21.950 earn up to close to

NOTE Confidence: 0.9605476

00:29:21.950 --> 00:29:23.470 fifty dollars And we tell

NOTE Confidence: 0.9605476

00:29:23.470 --> 00:29:25.390 them beforehand that whatever amount

NOTE Confidence: 0.9605476

00:29:25.390 --> 00:29:26.430 that you win during the

NOTE Confidence: 0.9605476

00:29:26.430 --> 00:29:27.470 task, you get to take

NOTE Confidence: 0.9605476

00:29:27.470 --> 00:29:28.785 home with you. And you

NOTE Confidence: 0.9605476

00:29:28.785 --> 00:29:30.145 imagine you're a little kid

NOTE Confidence: 0.9605476

00:29:30.145 --> 00:29:31.345 and you get very excited

NOTE Confidence: 0.9605476

00:29:31.345 --> 00:29:33.425 about fifty dollars. Right? Yeah.

NOTE Confidence: 0.9605476

00:29:33.425 --> 00:29:34.885 So once they earned,

NOTE Confidence: 0.9603459

00:29:35.665 --> 00:29:37.125 a big pile of money,

NOTE Confidence: 0.9603459

00:29:37.345 --> 00:29:38.305 it this is when we

NOTE Confidence: 0.9603459

00:29:38.305 --> 00:29:39.605 start frustrating them

NOTE Confidence: 0.90529543

00:29:39.985 --> 00:29:42.005 by giving them break feedback.

NOTE Confidence: 0.90529543

00:29:42.260 --> 00:29:44.100 So, sixty percent of the

NOTE Confidence: 0.90529543

00:29:44.100 --> 00:29:45.380 times and when they were

NOTE Confidence: 0.90529543

00:29:45.380 --> 00:29:45.880 correct,
NOTE Confidence: 0.9795835

00:29:46.340 --> 00:29:47.700 we told them that, oh,
NOTE Confidence: 0.9795835

00:29:47.700 --> 00:29:49.080 too bad you're too slow.
NOTE Confidence: 0.9795835

00:29:49.220 --> 00:29:50.500 And then we take away
NOTE Confidence: 0.9795835

00:29:50.500 --> 00:29:52.180 their money. And so we
NOTE Confidence: 0.9795835

00:29:52.180 --> 00:29:53.480 gave them this,
NOTE Confidence: 0.9762366

00:29:54.100 --> 00:29:55.700 cover story telling them that
NOTE Confidence: 0.9762366

00:29:55.700 --> 00:29:57.485 there's a complex algorithm
NOTE Confidence: 0.9831749

00:29:58.105 --> 00:29:59.945 that goes into calculation of
NOTE Confidence: 0.9831749

00:29:59.945 --> 00:30:00.985 how fast you are and
NOTE Confidence: 0.9831749

00:30:00.985 --> 00:30:02.985 whether you're fast enough. Yeah.
NOTE Confidence: 0.9831749

00:30:02.985 --> 00:30:04.605 So most of the participants
NOTE Confidence: 0.9522795

00:30:04.985 --> 00:30:06.825 believe that's true and why
NOTE Confidence: 0.9522795

00:30:06.825 --> 00:30:08.125 they were deducted money.
NOTE Confidence: 0.97732043

00:30:08.505 --> 00:30:09.225 But a lot of the
NOTE Confidence: 0.97732043

00:30:09.225 --> 00:30:10.185 times, they feel like they

NOTE Confidence: 0.97732043
00:30:10.185 --> 00:30:11.865 were fast enough, but they
NOTE Confidence: 0.97732043
00:30:11.865 --> 00:30:13.330 were still wrong or too
NOTE Confidence: 0.97732043
00:30:13.330 --> 00:30:13.830 slow.
NOTE Confidence: 0.9856541
00:30:14.130 --> 00:30:14.529 And,
NOTE Confidence: 0.98444146
00:30:15.010 --> 00:30:16.130 that caused quite a bit
NOTE Confidence: 0.98444146
00:30:16.130 --> 00:30:17.510 of frustration as well.
NOTE Confidence: 0.8293022
00:30:17.970 --> 00:30:18.470 Yeah.
NOTE Confidence: 0.96100116
00:30:18.929 --> 00:30:19.570 So that's,
NOTE Confidence: 0.9730317
00:30:20.049 --> 00:30:21.570 one paradigm that we use
NOTE Confidence: 0.9730317
00:30:21.570 --> 00:30:23.590 commonly to induce frustration,
NOTE Confidence: 0.9886206
00:30:23.970 --> 00:30:24.929 and I'll tell you some
NOTE Confidence: 0.9886206
00:30:24.929 --> 00:30:25.649 of the work,
NOTE Confidence: 0.8206904
00:30:25.970 --> 00:30:27.590 funny findings from that.
NOTE Confidence: 0.99935895
00:30:28.155 --> 00:30:28.655 And
NOTE Confidence: 0.9504135
00:30:29.275 --> 00:30:29.775 so,
NOTE Confidence: 0.9433894

00:30:31.195 --> 00:30:32.655 we have started,
NOTE Confidence: 0.9293115

00:30:33.355 --> 00:30:34.735 cross species collaborations
NOTE Confidence: 0.89258105

00:30:35.035 --> 00:30:36.255 with doctor Li,
NOTE Confidence: 0.9885656

00:30:36.715 --> 00:30:38.335 along with my previous,
NOTE Confidence: 0.77837425

00:30:38.715 --> 00:30:40.475 postdoc mentor, doctor Lee van
NOTE Confidence: 0.77837425

00:30:40.475 --> 00:30:42.810 Luft to, conduct cross species
NOTE Confidence: 0.77837425

00:30:42.810 --> 00:30:43.310 work.
NOTE Confidence: 0.8987085

00:30:43.770 --> 00:30:45.630 And we submitted a grant,
NOTE Confidence: 0.9025075

00:30:46.250 --> 00:30:48.270 still waiting to, find out.
NOTE Confidence: 0.9025075

00:30:48.410 --> 00:30:50.010 But hopefully, next time when
NOTE Confidence: 0.9025075

00:30:50.010 --> 00:30:51.290 I presented it in Grand
NOTE Confidence: 0.9025075

00:30:51.290 --> 00:30:52.890 Rounds, maybe six years down
NOTE Confidence: 0.9025075

00:30:52.890 --> 00:30:53.770 the road, I can tell
NOTE Confidence: 0.9025075

00:30:53.770 --> 00:30:54.270 you.
NOTE Confidence: 0.9410902

00:30:55.210 --> 00:30:56.430 No work from there.
NOTE Confidence: 0.9893031

00:30:56.985 --> 00:30:57.485 Okay.

NOTE Confidence: 0.9850587

00:30:58.425 --> 00:30:59.245 And so,

NOTE Confidence: 0.9989086

00:30:59.865 --> 00:31:00.684 as I mentioned,

NOTE Confidence: 0.9158386

00:31:01.225 --> 00:31:03.225 we are currently conducting this

NOTE Confidence: 0.9158386

00:31:03.225 --> 00:31:05.225 DP two study funded by,

NOTE Confidence: 0.9158386

00:31:05.305 --> 00:31:08.125 NIH's director's new innovator award.

NOTE Confidence: 0.9832614

00:31:08.585 --> 00:31:09.625 And I'm going to tell

NOTE Confidence: 0.9832614

00:31:09.625 --> 00:31:10.125 you,

NOTE Confidence: 0.9803392

00:31:10.505 --> 00:31:12.570 some of our attempt to

NOTE Confidence: 0.9803392

00:31:12.570 --> 00:31:13.529 try to come up with

NOTE Confidence: 0.9803392

00:31:13.529 --> 00:31:14.190 a parallel,

NOTE Confidence: 0.89152294

00:31:14.889 --> 00:31:16.409 across species of in our

NOTE Confidence: 0.89152294

00:31:16.409 --> 00:31:17.769 paradigms and how we do

NOTE Confidence: 0.89152294

00:31:17.769 --> 00:31:18.669 that in humans.

NOTE Confidence: 0.62355113

00:31:20.570 --> 00:31:21.070 K.

NOTE Confidence: 0.95236874

00:31:22.169 --> 00:31:24.350 And we started data collection

NOTE Confidence: 0.95236874

00:31:24.649 --> 00:31:26.009 about a little over a
NOTE Confidence: 0.95236874

00:31:26.009 --> 00:31:27.289 year ago, and we just
NOTE Confidence: 0.95236874

00:31:27.289 --> 00:31:29.455 wrap up our, first year
NOTE Confidence: 0.95236874

00:31:29.455 --> 00:31:31.535 data collection. And but our
NOTE Confidence: 0.95236874

00:31:31.535 --> 00:31:33.135 goal is to recruit hundred
NOTE Confidence: 0.95236874

00:31:33.135 --> 00:31:34.735 and eighty kids. And so
NOTE Confidence: 0.95236874

00:31:34.735 --> 00:31:36.434 far, and thanks to my
NOTE Confidence: 0.95236874

00:31:36.495 --> 00:31:36.995 amazing,
NOTE Confidence: 0.87605494

00:31:37.535 --> 00:31:38.035 lab,
NOTE Confidence: 0.98622686

00:31:38.495 --> 00:31:40.495 and we have, enrolled more
NOTE Confidence: 0.98622686

00:31:40.495 --> 00:31:42.570 than ninety kids. Yeah. So
NOTE Confidence: 0.98622686

00:31:42.790 --> 00:31:44.550 almost half of our about
NOTE Confidence: 0.98622686

00:31:44.550 --> 00:31:45.670 half of our goal, but
NOTE Confidence: 0.98622686

00:31:45.670 --> 00:31:46.630 we still need to follow
NOTE Confidence: 0.98622686

00:31:46.630 --> 00:31:47.910 them up. But the goal
NOTE Confidence: 0.98622686

00:31:47.910 --> 00:31:49.610 is hundred and eighty kids,

NOTE Confidence: 0.900552
00:31:49.990 --> 00:31:52.410 age, eight to thirteen and
NOTE Confidence: 0.89854926
00:31:52.710 --> 00:31:54.410 half male, half female.
NOTE Confidence: 0.98146063
00:31:54.885 --> 00:31:56.585 And we want to oversample
NOTE Confidence: 0.98146063
00:31:56.725 --> 00:31:57.865 for high irritability.
NOTE Confidence: 0.9962882
00:31:58.165 --> 00:31:59.445 So about two thirds of
NOTE Confidence: 0.9962882
00:31:59.445 --> 00:32:01.145 them will have high irritability.
NOTE Confidence: 0.9977565
00:32:02.405 --> 00:32:03.465 And it's a longitudinal
NOTE Confidence: 0.9903918
00:32:03.845 --> 00:32:05.765 imaging study, and so each
NOTE Confidence: 0.9903918
00:32:05.765 --> 00:32:07.045 kid and family will be
NOTE Confidence: 0.9903918
00:32:07.045 --> 00:32:08.245 in our study for,
NOTE Confidence: 0.97477597
00:32:08.885 --> 00:32:09.925 over the course of two
NOTE Confidence: 0.97477597
00:32:09.925 --> 00:32:11.610 years. So they come in
NOTE Confidence: 0.97477597
00:32:11.610 --> 00:32:13.950 for baseline assessment, time one.
NOTE Confidence: 0.97477597
00:32:14.090 --> 00:32:15.390 And then a year later,
NOTE Confidence: 0.97477597
00:32:15.450 --> 00:32:16.570 we invite them back for
NOTE Confidence: 0.97477597

00:32:16.570 --> 00:32:17.930 time two assessment, and then

NOTE Confidence: 0.97477597

00:32:17.930 --> 00:32:19.610 another year later, time three

NOTE Confidence: 0.97477597

00:32:19.610 --> 00:32:20.110 assessment.

NOTE Confidence: 0.94471663

00:32:21.050 --> 00:32:22.490 And we give out this,

NOTE Confidence: 0.94796836

00:32:23.025 --> 00:32:25.025 really cute, three d printed,

NOTE Confidence: 0.9420576

00:32:25.585 --> 00:32:26.945 brain mod. I should have

NOTE Confidence: 0.9420576

00:32:26.945 --> 00:32:27.685 brought it.

NOTE Confidence: 0.930635

00:32:29.665 --> 00:32:30.785 Yeah. Amanda was,

NOTE Confidence: 0.9235878

00:32:31.345 --> 00:32:32.865 Amanda's kids, and we're in,

NOTE Confidence: 0.9235878

00:32:33.185 --> 00:32:34.705 one of our previous studies,

NOTE Confidence: 0.9235878

00:32:34.705 --> 00:32:35.985 so has a two d

NOTE Confidence: 0.9235878

00:32:35.985 --> 00:32:36.725 brain model.

NOTE Confidence: 0.991616

00:32:37.100 --> 00:32:38.860 Yeah. So we, after they

NOTE Confidence: 0.991616

00:32:38.860 --> 00:32:40.000 complete their scan,

NOTE Confidence: 0.961896

00:32:40.620 --> 00:32:42.140 we process the brain data

NOTE Confidence: 0.961896

00:32:42.140 --> 00:32:43.100 and then put it through

NOTE Confidence: 0.961896
00:32:43.100 --> 00:32:44.380 three d printer. And so
NOTE Confidence: 0.961896
00:32:44.380 --> 00:32:46.080 every kid get a souvenir
NOTE Confidence: 0.961896
00:32:46.220 --> 00:32:47.260 that they take can take
NOTE Confidence: 0.961896
00:32:47.260 --> 00:32:48.700 home with them. And we
NOTE Confidence: 0.961896
00:32:48.700 --> 00:32:49.845 plan to do this,
NOTE Confidence: 0.97696406
00:32:50.965 --> 00:32:51.465 over,
NOTE Confidence: 0.98346233
00:32:52.645 --> 00:32:54.725 the over time and then
NOTE Confidence: 0.98346233
00:32:54.725 --> 00:32:56.245 print out each model a
NOTE Confidence: 0.98346233
00:32:56.245 --> 00:32:57.765 little bigger at each time
NOTE Confidence: 0.98346233
00:32:57.765 --> 00:32:59.125 point so that they can
NOTE Confidence: 0.98346233
00:32:59.125 --> 00:33:00.245 have it on their desk
NOTE Confidence: 0.98346233
00:33:00.245 --> 00:33:02.105 and signal their brain growth
NOTE Confidence: 0.85015637
00:33:02.485 --> 00:33:03.304 over time.
NOTE Confidence: 0.9667515
00:33:05.350 --> 00:33:07.270 K? And so at each
NOTE Confidence: 0.9667515
00:33:07.270 --> 00:33:08.090 time point,
NOTE Confidence: 0.9585916

00:33:08.630 --> 00:33:09.590 we have them do the
NOTE Confidence: 0.9585916

00:33:09.590 --> 00:33:10.410 same assessment,
NOTE Confidence: 0.99514383

00:33:10.950 --> 00:33:11.990 and so then we can
NOTE Confidence: 0.99514383

00:33:11.990 --> 00:33:12.970 see how
NOTE Confidence: 0.7328397

00:33:13.510 --> 00:33:14.169 the behavior,
NOTE Confidence: 0.89304245

00:33:14.630 --> 00:33:15.910 symptoms, and,
NOTE Confidence: 0.7244739

00:33:16.230 --> 00:33:16.730 neuroresponses
NOTE Confidence: 0.99915195

00:33:17.270 --> 00:33:18.730 changes over time.
NOTE Confidence: 0.96960163

00:33:19.065 --> 00:33:19.945 So one of the main
NOTE Confidence: 0.96960163

00:33:19.945 --> 00:33:20.985 thing that we have them
NOTE Confidence: 0.96960163

00:33:20.985 --> 00:33:23.485 do is, parent child interaction
NOTE Confidence: 0.96960163

00:33:23.705 --> 00:33:25.544 tasks. So both parent and
NOTE Confidence: 0.96960163

00:33:25.544 --> 00:33:26.904 child come into the lab
NOTE Confidence: 0.96960163

00:33:26.904 --> 00:33:28.445 and they have to engage
NOTE Confidence: 0.96960163

00:33:28.505 --> 00:33:29.885 in conflict discussion.
NOTE Confidence: 0.8182788

00:33:30.424 --> 00:33:31.225 And so they have to

NOTE Confidence: 0.8182788

00:33:31.225 --> 00:33:32.904 pick out two topics and

NOTE Confidence: 0.8182788

00:33:32.904 --> 00:33:35.240 that elicit most complex between

NOTE Confidence: 0.8182788

00:33:35.380 --> 00:33:37.860 parent and child. So it

NOTE Confidence: 0.8182788

00:33:37.860 --> 00:33:38.580 could be homework, it could

NOTE Confidence: 0.8182788

00:33:38.580 --> 00:33:39.540 be screen time, could be

NOTE Confidence: 0.8182788

00:33:39.540 --> 00:33:40.360 hanging out with friends.

NOTE Confidence: 0.8702983

00:33:41.220 --> 00:33:42.660 Yeah. And they also have

NOTE Confidence: 0.8702983

00:33:42.660 --> 00:33:44.740 to work together to solve

NOTE Confidence: 0.8702983

00:33:44.740 --> 00:33:45.640 some puzzle.

NOTE Confidence: 0.88742435

00:33:46.179 --> 00:33:47.700 And even though, some of

NOTE Confidence: 0.88742435

00:33:47.700 --> 00:33:49.320 the puzzles are unsolvable,

NOTE Confidence: 0.9893504

00:33:49.975 --> 00:33:52.215 unbeknownst to them. Yeah. This

NOTE Confidence: 0.9893504

00:33:52.215 --> 00:33:53.335 is our attempt to try

NOTE Confidence: 0.9893504

00:33:53.335 --> 00:33:54.794 to elicit frustration

NOTE Confidence: 0.9756502

00:33:55.174 --> 00:33:56.794 in the kids. But oftentimes,

NOTE Confidence: 0.99886745

00:33:57.095 --> 00:33:58.695 even though the tasks are
NOTE Confidence: 0.99886745

00:33:58.695 --> 00:34:00.554 designed to frustrate kids,
NOTE Confidence: 0.9989045

00:34:01.014 --> 00:34:02.554 we often end up frustrating
NOTE Confidence: 0.9989045

00:34:02.615 --> 00:34:03.115 parents.
NOTE Confidence: 0.99972266

00:34:03.460 --> 00:34:05.300 So it is interesting to
NOTE Confidence: 0.99972266

00:34:05.300 --> 00:34:05.800 see
NOTE Confidence: 0.97224474

00:34:06.100 --> 00:34:06.600 how,
NOTE Confidence: 0.9674835

00:34:07.380 --> 00:34:09.380 we how the effect go
NOTE Confidence: 0.9674835

00:34:09.380 --> 00:34:10.739 from child to parent and
NOTE Confidence: 0.9674835

00:34:10.739 --> 00:34:12.660 parent to child, and then
NOTE Confidence: 0.9674835

00:34:12.660 --> 00:34:14.420 we can hopefully use some
NOTE Confidence: 0.9674835

00:34:14.420 --> 00:34:15.620 data to,
NOTE Confidence: 0.883479

00:34:16.020 --> 00:34:18.280 better probe those dynamic interact
NOTE Confidence: 0.9950042

00:34:19.835 --> 00:34:21.035 interaction. And so while they
NOTE Confidence: 0.9950042

00:34:21.035 --> 00:34:22.815 are engaged in those interactive
NOTE Confidence: 0.9901377

00:34:23.114 --> 00:34:24.714 tasks, they have to wear

NOTE Confidence: 0.9901377
00:34:24.714 --> 00:34:25.535 a smartwatch,
NOTE Confidence: 0.82799095
00:34:26.635 --> 00:34:27.135 Empedica
NOTE Confidence: 0.9663139
00:34:27.435 --> 00:34:27.935 smartwatch,
NOTE Confidence: 0.99774915
00:34:28.395 --> 00:34:30.015 that record their physiology.
NOTE Confidence: 0.9936365
00:34:30.474 --> 00:34:31.915 So this, could be heart
NOTE Confidence: 0.9936365
00:34:31.915 --> 00:34:33.430 rate, skin conductance,
NOTE Confidence: 0.9844359
00:34:33.730 --> 00:34:35.490 heart rate variability, as well
NOTE Confidence: 0.9844359
00:34:35.490 --> 00:34:36.630 as motor activity.
NOTE Confidence: 0.99940354
00:34:37.170 --> 00:34:38.370 So we can see how
NOTE Confidence: 0.99940354
00:34:38.370 --> 00:34:39.110 their physiology
NOTE Confidence: 0.9444822
00:34:39.490 --> 00:34:39.990 unfold,
NOTE Confidence: 0.9979929
00:34:40.610 --> 00:34:41.110 as
NOTE Confidence: 0.9810042
00:34:41.650 --> 00:34:43.490 the task goes on through
NOTE Confidence: 0.9810042
00:34:43.490 --> 00:34:45.350 the different frustration manipulation.
NOTE Confidence: 0.9976516
00:34:46.695 --> 00:34:48.155 And not only
NOTE Confidence: 0.96943545

00:34:48.455 --> 00:34:49.175 we can,
NOTE Confidence: 0.9401731

00:34:49.655 --> 00:34:50.715 see how individuals'
NOTE Confidence: 0.97687757

00:34:51.015 --> 00:34:51.515 physiology
NOTE Confidence: 0.9058251

00:34:51.975 --> 00:34:52.475 unfold,
NOTE Confidence: 0.9995636

00:34:52.855 --> 00:34:54.715 we can also study how
NOTE Confidence: 0.957482

00:34:55.094 --> 00:34:55.594 parents'
NOTE Confidence: 0.9871537

00:34:55.895 --> 00:34:56.395 physiology
NOTE Confidence: 0.9925547

00:34:57.094 --> 00:34:58.375 are in sync or out
NOTE Confidence: 0.9925547

00:34:58.375 --> 00:34:59.815 of sync with the child's
NOTE Confidence: 0.9925547

00:34:59.815 --> 00:35:00.315 physiology.
NOTE Confidence: 0.9903342

00:35:01.170 --> 00:35:02.869 And this parent child synchrony
NOTE Confidence: 0.9993138

00:35:03.329 --> 00:35:04.390 could be a biomarker
NOTE Confidence: 0.97040194

00:35:04.690 --> 00:35:06.450 to indicate a parent child
NOTE Confidence: 0.97040194

00:35:06.450 --> 00:35:06.950 coregulation.
NOTE Confidence: 0.99935865

00:35:07.489 --> 00:35:08.550 And this is particularly
NOTE Confidence: 0.83130014

00:35:09.089 --> 00:35:09.589 important,

NOTE Confidence: 0.9837649

00:35:10.210 --> 00:35:11.730 especially when the kids are

NOTE Confidence: 0.9837649

00:35:11.730 --> 00:35:13.275 still young. They still rely

NOTE Confidence: 0.9837649

00:35:13.275 --> 00:35:14.795 on parents a lot for

NOTE Confidence: 0.9837649

00:35:14.795 --> 00:35:15.775 emotion regulation.

NOTE Confidence: 0.99688786

00:35:16.555 --> 00:35:17.535 Yeah. So

NOTE Confidence: 0.99233085

00:35:18.075 --> 00:35:19.035 we will be able to

NOTE Confidence: 0.99233085

00:35:19.035 --> 00:35:19.934 look at that.

NOTE Confidence: 0.84609413

00:35:20.315 --> 00:35:21.994 And then they would comp

NOTE Confidence: 0.9958811

00:35:22.555 --> 00:35:23.934 they also have to complete

NOTE Confidence: 0.9958811

00:35:24.075 --> 00:35:26.154 comprehensive clinical interviews and,

NOTE Confidence: 0.9981035

00:35:26.635 --> 00:35:27.135 assessments

NOTE Confidence: 0.97323763

00:35:28.050 --> 00:35:30.150 and do the smartphone survey.

NOTE Confidence: 0.97323763

00:35:30.290 --> 00:35:31.810 So three times a day

NOTE Confidence: 0.97323763

00:35:31.810 --> 00:35:33.810 before school, after school, right

NOTE Confidence: 0.97323763

00:35:33.810 --> 00:35:34.710 before bedtime,

NOTE Confidence: 0.9992541

00:35:35.010 --> 00:35:36.210 and over the course of
NOTE Confidence: 0.9992541

00:35:36.210 --> 00:35:37.030 seven days.
NOTE Confidence: 0.9147165

00:35:37.969 --> 00:35:38.710 And importantly,
NOTE Confidence: 0.9284217

00:35:39.330 --> 00:35:40.370 the child have to go
NOTE Confidence: 0.9284217

00:35:40.370 --> 00:35:41.190 through fMRI,
NOTE Confidence: 0.9369614

00:35:41.969 --> 00:35:43.510 doing a frustration paradigm.
NOTE Confidence: 0.9487385

00:35:44.025 --> 00:35:45.145 And so I'm gonna tell
NOTE Confidence: 0.9487385

00:35:45.145 --> 00:35:46.605 you more about the frustration
NOTE Confidence: 0.9487385

00:35:46.665 --> 00:35:48.924 paradigm and which we,
NOTE Confidence: 0.87150073

00:35:50.585 --> 00:35:51.724 newly developed
NOTE Confidence: 0.97163206

00:35:52.184 --> 00:35:53.864 to try to model the
NOTE Confidence: 0.97163206

00:35:53.864 --> 00:35:55.224 paradigm that I just show
NOTE Confidence: 0.97163206

00:35:55.224 --> 00:35:56.204 you in animals.
NOTE Confidence: 0.9448426

00:35:56.859 --> 00:35:59.040 So this, APRO paradigm.
NOTE Confidence: 0.9921186

00:36:00.219 --> 00:36:01.339 So we thought that we
NOTE Confidence: 0.9921186

00:36:01.339 --> 00:36:01.839 can,

NOTE Confidence: 0.98836327
00:36:02.380 --> 00:36:04.160 design something that's similar,
NOTE Confidence: 0.96361965
00:36:05.099 --> 00:36:07.580 removing the cognitive component because
NOTE Confidence: 0.96361965
00:36:07.580 --> 00:36:09.359 animals don't use
NOTE Confidence: 0.857583
00:36:09.660 --> 00:36:10.960 higher cognitive functions
NOTE Confidence: 0.84191054
00:36:11.415 --> 00:36:12.315 when they're performed
NOTE Confidence: 0.99243945
00:36:12.695 --> 00:36:14.875 on those reward tasks. Right?
NOTE Confidence: 0.99243945
00:36:15.015 --> 00:36:16.295 But a lot of the
NOTE Confidence: 0.99243945
00:36:16.295 --> 00:36:16.795 existing,
NOTE Confidence: 0.62927073
00:36:17.415 --> 00:36:17.915 FNR
NOTE Confidence: 0.9911421
00:36:18.215 --> 00:36:19.975 paradigms in humans do have
NOTE Confidence: 0.9911421
00:36:19.975 --> 00:36:21.275 a cognitive component.
NOTE Confidence: 0.9363709
00:36:21.735 --> 00:36:23.015 So we wanted to remove
NOTE Confidence: 0.9363709
00:36:23.015 --> 00:36:23.835 that cognition.
NOTE Confidence: 0.99576217
00:36:24.455 --> 00:36:25.335 And so what we come
NOTE Confidence: 0.99576217
00:36:25.335 --> 00:36:27.370 up with is to take
NOTE Confidence: 0.9847585

00:36:27.989 --> 00:36:29.750 the doors task, which is
NOTE Confidence: 0.9847585

00:36:29.750 --> 00:36:30.489 a traditional
NOTE Confidence: 0.95921093

00:36:30.790 --> 00:36:31.690 reward sensitivity
NOTE Confidence: 0.9993405

00:36:32.070 --> 00:36:32.570 task
NOTE Confidence: 0.8152526

00:36:32.950 --> 00:36:33.450 where,
NOTE Confidence: 0.9785247

00:36:33.910 --> 00:36:36.150 participants are presented with two
NOTE Confidence: 0.9785247

00:36:36.150 --> 00:36:37.750 doors, and they just had
NOTE Confidence: 0.9785247

00:36:37.750 --> 00:36:39.110 to select one of the
NOTE Confidence: 0.9785247

00:36:39.110 --> 00:36:40.390 door to find out whether
NOTE Confidence: 0.9785247

00:36:40.390 --> 00:36:42.075 they get reward or not.
NOTE Confidence: 0.95149595

00:36:42.395 --> 00:36:44.395 And so this would, be
NOTE Confidence: 0.95149595

00:36:44.395 --> 00:36:46.155 similar to animal having to
NOTE Confidence: 0.95149595

00:36:46.155 --> 00:36:47.114 run to the left or
NOTE Confidence: 0.95149595

00:36:47.114 --> 00:36:48.555 run to the right to
NOTE Confidence: 0.95149595

00:36:48.555 --> 00:36:50.234 obtain the reward. So control
NOTE Confidence: 0.95149595

00:36:50.234 --> 00:36:52.015 for that motor component.

NOTE Confidence: 0.96394384
00:36:53.114 --> 00:36:53.614 And,
NOTE Confidence: 0.9623002
00:36:55.370 --> 00:36:57.870 but our reward schedule is
NOTE Confidence: 0.9623002
00:36:57.930 --> 00:37:00.110 slightly different than the animal's
NOTE Confidence: 0.9623002
00:37:00.250 --> 00:37:02.510 reward schedule, and this
NOTE Confidence: 0.9602084
00:37:02.810 --> 00:37:05.130 is, after a lot of
NOTE Confidence: 0.9602084
00:37:05.130 --> 00:37:06.730 piloting. And this is the
NOTE Confidence: 0.9602084
00:37:06.730 --> 00:37:08.410 reward schedule that we settle
NOTE Confidence: 0.9602084
00:37:08.410 --> 00:37:10.215 on because one of the
NOTE Confidence: 0.9602084
00:37:10.215 --> 00:37:10.715 challenges
NOTE Confidence: 0.9642682
00:37:11.015 --> 00:37:11.495 of,
NOTE Confidence: 0.9955432
00:37:11.895 --> 00:37:14.215 doing frustration work is that
NOTE Confidence: 0.9955432
00:37:14.215 --> 00:37:15.415 you have to strike a
NOTE Confidence: 0.9955432
00:37:15.415 --> 00:37:16.715 fine balance between,
NOTE Confidence: 0.9733376
00:37:17.735 --> 00:37:19.815 not frustrating kids too much
NOTE Confidence: 0.9733376
00:37:19.815 --> 00:37:21.495 and too fast right away
NOTE Confidence: 0.9733376

00:37:21.495 --> 00:37:23.195 that they decided to quit
NOTE Confidence: 0.9759149

00:37:23.550 --> 00:37:25.170 and not complete your task.
NOTE Confidence: 0.9759149

00:37:25.469 --> 00:37:26.590 But you also want it
NOTE Confidence: 0.9759149

00:37:26.590 --> 00:37:28.670 to be potent enough that,
NOTE Confidence: 0.9759149

00:37:28.830 --> 00:37:31.250 would elicit enough negative effect
NOTE Confidence: 0.9759149

00:37:31.469 --> 00:37:32.910 that allows you to probe
NOTE Confidence: 0.9759149

00:37:32.910 --> 00:37:34.450 the underlying mechanism.
NOTE Confidence: 0.9512724

00:37:34.910 --> 00:37:36.364 Right? And so we settle
NOTE Confidence: 0.9512724

00:37:36.364 --> 00:37:36.605 on,
NOTE Confidence: 0.89084244

00:37:38.685 --> 00:37:39.984 eighty percent reward,
NOTE Confidence: 0.9785004

00:37:40.765 --> 00:37:42.445 when we first condition them
NOTE Confidence: 0.9785004

00:37:42.445 --> 00:37:43.585 to expect reward.
NOTE Confidence: 0.9456169

00:37:43.885 --> 00:37:45.405 Hundred percent would just be
NOTE Confidence: 0.9456169

00:37:45.405 --> 00:37:46.224 very unbelievable.
NOTE Confidence: 0.8642211

00:37:47.085 --> 00:37:48.945 Not not not believable.
NOTE Confidence: 0.9303807

00:37:49.700 --> 00:37:50.980 Right? Yeah. So we settle

NOTE Confidence: 0.9303807
00:37:50.980 --> 00:37:52.440 on eighty percent reward,
NOTE Confidence: 0.9907024
00:37:52.819 --> 00:37:53.799 during conditioning,
NOTE Confidence: 0.9235675
00:37:54.180 --> 00:37:56.039 which is the nonfrustration part,
NOTE Confidence: 0.97472924
00:37:56.500 --> 00:37:58.359 and then we start frustrating
NOTE Confidence: 0.97472924
00:37:58.500 --> 00:38:00.599 them, by taking away,
NOTE Confidence: 0.976819
00:38:01.059 --> 00:38:03.079 their reward that they expect
NOTE Confidence: 0.976819
00:38:03.219 --> 00:38:03.880 to get,
NOTE Confidence: 0.9680036
00:38:04.475 --> 00:38:06.075 so sixty percent of the
NOTE Confidence: 0.9680036
00:38:06.075 --> 00:38:06.575 trial.
NOTE Confidence: 0.9845478
00:38:07.275 --> 00:38:09.594 And then, we revert back
NOTE Confidence: 0.9845478
00:38:09.594 --> 00:38:10.495 to the original,
NOTE Confidence: 0.9166646
00:38:11.755 --> 00:38:14.075 reward schedule, eighty percent, so
NOTE Confidence: 0.9166646
00:38:14.075 --> 00:38:14.895 that they don't
NOTE Confidence: 0.9764771
00:38:15.275 --> 00:38:15.775 end
NOTE Confidence: 0.95819724
00:38:16.410 --> 00:38:18.089 a negative no or negative
NOTE Confidence: 0.95819724

00:38:18.089 --> 00:38:19.849 move before going home. Yeah.

NOTE Confidence: 0.95819724

00:38:19.849 --> 00:38:21.469 Otherwise, parents will not

NOTE Confidence: 0.96059513

00:38:22.010 --> 00:38:23.469 be very happy with this.

NOTE Confidence: 0.96059513

00:38:23.609 --> 00:38:24.109 Yes.

NOTE Confidence: 0.96291876

00:38:25.290 --> 00:38:27.050 Okay. So that is what

NOTE Confidence: 0.96291876

00:38:27.050 --> 00:38:28.410 we do. So they have

NOTE Confidence: 0.96291876

00:38:28.410 --> 00:38:29.775 to go through the doors

NOTE Confidence: 0.96291876

00:38:29.855 --> 00:38:30.974 task and then find out

NOTE Confidence: 0.96291876

00:38:30.974 --> 00:38:32.835 they get reward or not.

NOTE Confidence: 0.72079265

00:38:34.734 --> 00:38:35.234 K?

NOTE Confidence: 0.9842752

00:38:35.934 --> 00:38:37.614 And another thing that we

NOTE Confidence: 0.9842752

00:38:37.614 --> 00:38:38.674 try to address

NOTE Confidence: 0.96083766

00:38:39.214 --> 00:38:40.355 in our paradigm

NOTE Confidence: 0.9841204

00:38:41.055 --> 00:38:43.140 is to is the is,

NOTE Confidence: 0.9841204

00:38:43.380 --> 00:38:44.500 because of the gap in

NOTE Confidence: 0.9841204

00:38:44.500 --> 00:38:45.719 the existing,

NOTE Confidence: 0.9132137
00:38:46.260 --> 00:38:46.760 fMRI
NOTE Confidence: 0.98841417
00:38:47.460 --> 00:38:47.960 research,
NOTE Confidence: 0.97218937
00:38:49.460 --> 00:38:50.980 which is that most of
NOTE Confidence: 0.97218937
00:38:50.980 --> 00:38:52.680 the paradigm use nonsocial
NOTE Confidence: 0.9705484
00:38:52.980 --> 00:38:53.480 reward,
NOTE Confidence: 0.9098223
00:38:53.940 --> 00:38:55.719 especially monetary reward,
NOTE Confidence: 0.9836153
00:38:56.535 --> 00:38:58.055 and not a lot of
NOTE Confidence: 0.9836153
00:38:58.055 --> 00:38:59.415 studies. I think so far,
NOTE Confidence: 0.9836153
00:38:59.415 --> 00:39:00.795 there's only one study
NOTE Confidence: 0.8994487
00:39:01.175 --> 00:39:03.494 that use social feedback, sort
NOTE Confidence: 0.8994487
00:39:03.494 --> 00:39:04.954 of, social stimulus
NOTE Confidence: 0.9408792
00:39:05.575 --> 00:39:07.434 as a rewarding stimulus,
NOTE Confidence: 0.95697314
00:39:08.055 --> 00:39:09.655 to frustrate as the source
NOTE Confidence: 0.95697314
00:39:09.655 --> 00:39:10.315 of frustration.
NOTE Confidence: 0.9715448
00:39:11.250 --> 00:39:12.290 And as I show you
NOTE Confidence: 0.9715448

00:39:12.290 --> 00:39:14.150 earlier, remember the trigger,
NOTE Confidence: 0.9602017

00:39:14.850 --> 00:39:16.450 common triggers, and one of
NOTE Confidence: 0.9602017

00:39:16.450 --> 00:39:18.050 the top trigger is social
NOTE Confidence: 0.9602017

00:39:18.050 --> 00:39:18.550 conflict.
NOTE Confidence: 0.9755263

00:39:19.010 --> 00:39:20.370 So it seems to be
NOTE Confidence: 0.9755263

00:39:20.370 --> 00:39:22.050 an important gap before not
NOTE Confidence: 0.9755263

00:39:22.050 --> 00:39:23.830 tapping into this social domain
NOTE Confidence: 0.96386874

00:39:24.130 --> 00:39:26.230 while designing a frustration paradigm.
NOTE Confidence: 0.8671966

00:39:26.955 --> 00:39:27.695 And especially,
NOTE Confidence: 0.9042249

00:39:28.395 --> 00:39:29.855 so social frustration
NOTE Confidence: 0.9841261

00:39:30.155 --> 00:39:31.355 could come from, like, with
NOTE Confidence: 0.9841261

00:39:31.355 --> 00:39:32.655 parents, with peers,
NOTE Confidence: 0.99184525

00:39:33.515 --> 00:39:35.375 or with siblings. Right? But,
NOTE Confidence: 0.9967148

00:39:35.835 --> 00:39:37.435 in our study, we wanted
NOTE Confidence: 0.9967148

00:39:37.435 --> 00:39:37.935 to
NOTE Confidence: 0.98058224

00:39:38.315 --> 00:39:39.935 sort of focus on peers

NOTE Confidence: 0.98058224
00:39:40.075 --> 00:39:40.475 as,
NOTE Confidence: 0.9987991
00:39:40.955 --> 00:39:41.455 the
NOTE Confidence: 0.97827643
00:39:42.020 --> 00:39:43.859 source of social frustration because
NOTE Confidence: 0.97827643
00:39:43.859 --> 00:39:45.140 we already have the parent
NOTE Confidence: 0.97827643
00:39:45.140 --> 00:39:46.040 child interaction.
NOTE Confidence: 0.9969101
00:39:46.579 --> 00:39:47.480 Yeah. So
NOTE Confidence: 0.8688855
00:39:47.780 --> 00:39:49.619 looking at parent child interaction
NOTE Confidence: 0.8688855
00:39:49.619 --> 00:39:50.599 and the peer,
NOTE Confidence: 0.97945863
00:39:51.140 --> 00:39:51.640 component,
NOTE Confidence: 0.98915434
00:39:52.180 --> 00:39:53.640 will provide us more,
NOTE Confidence: 0.99726695
00:39:54.660 --> 00:39:55.400 more information.
NOTE Confidence: 0.9521676
00:39:58.465 --> 00:39:59.905 And I think I don't
NOTE Confidence: 0.9521676
00:39:59.905 --> 00:40:00.305 need to tell,
NOTE Confidence: 0.9919387
00:40:01.585 --> 00:40:03.344 the audience in this room
NOTE Confidence: 0.9919387
00:40:03.344 --> 00:40:04.165 how important,
NOTE Confidence: 0.9913276

00:40:05.025 --> 00:40:05.525 peer
NOTE Confidence: 0.9034699

00:40:05.825 --> 00:40:06.885 influence is,
NOTE Confidence: 0.9616797

00:40:07.265 --> 00:40:09.730 especially to school age kids.
NOTE Confidence: 0.9616797

00:40:09.950 --> 00:40:11.890 And even though parental influence
NOTE Confidence: 0.9616797

00:40:12.109 --> 00:40:14.450 remained, and parental support remained
NOTE Confidence: 0.9616797

00:40:14.589 --> 00:40:15.089 important
NOTE Confidence: 0.9668834

00:40:15.390 --> 00:40:16.770 as kids grow older,
NOTE Confidence: 0.9551475

00:40:17.150 --> 00:40:18.750 but as they get into,
NOTE Confidence: 0.9551475

00:40:18.989 --> 00:40:19.489 preteens
NOTE Confidence: 0.99873734

00:40:19.869 --> 00:40:20.690 and teens,
NOTE Confidence: 0.9951174

00:40:21.789 --> 00:40:22.690 peer influence
NOTE Confidence: 0.86078817

00:40:23.025 --> 00:40:25.025 start gaining its traction in
NOTE Confidence: 0.86078817

00:40:25.025 --> 00:40:25.525 salience.
NOTE Confidence: 0.9730765

00:40:26.704 --> 00:40:28.484 And this I was made
NOTE Confidence: 0.9730765

00:40:28.704 --> 00:40:30.224 keenly aware of this,
NOTE Confidence: 0.999363

00:40:30.704 --> 00:40:31.204 recently

NOTE Confidence: 0.95158476

00:40:31.984 --> 00:40:33.505 when my son and I,

NOTE Confidence: 0.95158476

00:40:33.505 --> 00:40:34.385 a nine year old at

NOTE Confidence: 0.95158476

00:40:34.385 --> 00:40:36.145 the time, went to a

NOTE Confidence: 0.95158476

00:40:36.145 --> 00:40:37.680 water park, and they have

NOTE Confidence: 0.95158476

00:40:37.680 --> 00:40:39.839 this giant water slide that

NOTE Confidence: 0.95158476

00:40:39.839 --> 00:40:41.440 has a sixty feet drop

NOTE Confidence: 0.95158476

00:40:41.440 --> 00:40:43.040 off, and that will take

NOTE Confidence: 0.95158476

00:40:43.040 --> 00:40:43.940 you right down

NOTE Confidence: 0.8230338

00:40:44.400 --> 00:40:45.380 onto the water.

NOTE Confidence: 0.9821968

00:40:45.680 --> 00:40:46.640 And so we were very

NOTE Confidence: 0.9821968

00:40:46.640 --> 00:40:47.839 excited to try it, and

NOTE Confidence: 0.9821968

00:40:47.839 --> 00:40:48.880 both of us got up

NOTE Confidence: 0.9821968

00:40:48.880 --> 00:40:49.275 there

NOTE Confidence: 0.9749249

00:40:49.755 --> 00:40:51.835 and he started, getting cold

NOTE Confidence: 0.9749249

00:40:51.835 --> 00:40:53.375 feet and was a little

NOTE Confidence: 0.9654186

00:40:53.914 --> 00:40:55.594 scared to go down. So
NOTE Confidence: 0.9654186

00:40:55.594 --> 00:40:57.035 I was like, why don't
NOTE Confidence: 0.9654186

00:40:57.035 --> 00:40:58.315 I go down? And then
NOTE Confidence: 0.9654186

00:40:58.315 --> 00:40:59.434 you can see whether you
NOTE Confidence: 0.9654186

00:40:59.434 --> 00:41:00.875 want to come down or
NOTE Confidence: 0.9654186

00:41:00.954 --> 00:41:02.154 with me or you wanna
NOTE Confidence: 0.9654186

00:41:02.154 --> 00:41:03.775 take the stairs back down.
NOTE Confidence: 0.9512983

00:41:04.080 --> 00:41:05.440 Yeah. And so I went
NOTE Confidence: 0.9512983

00:41:05.440 --> 00:41:07.040 down and immediately as I
NOTE Confidence: 0.9512983

00:41:07.040 --> 00:41:08.900 let go, I regretted it.
NOTE Confidence: 0.99117756

00:41:09.920 --> 00:41:11.380 I'm too old for this.
NOTE Confidence: 0.9721649

00:41:11.680 --> 00:41:13.120 Yeah. So I did. And
NOTE Confidence: 0.9721649

00:41:13.120 --> 00:41:14.320 then I went down and
NOTE Confidence: 0.9721649

00:41:14.320 --> 00:41:15.140 thinking that,
NOTE Confidence: 0.99515903

00:41:15.600 --> 00:41:16.719 he would just take the
NOTE Confidence: 0.99515903

00:41:16.719 --> 00:41:18.020 stairs down because,

NOTE Confidence: 0.9644107

00:41:18.640 --> 00:41:19.520 he tend to be a

NOTE Confidence: 0.9644107

00:41:19.520 --> 00:41:21.494 little tentative and cautious when

NOTE Confidence: 0.9644107

00:41:21.494 --> 00:41:22.474 it comes to height.

NOTE Confidence: 0.89565444

00:41:22.855 --> 00:41:23.755 But surprisingly,

NOTE Confidence: 0.91143876

00:41:24.055 --> 00:41:24.875 he came down.

NOTE Confidence: 0.97842896

00:41:25.175 --> 00:41:26.295 And I asked him,

NOTE Confidence: 0.9660301

00:41:26.855 --> 00:41:27.895 yeah. I didn't think that

NOTE Confidence: 0.9660301

00:41:27.895 --> 00:41:28.855 you were gonna do it.

NOTE Confidence: 0.9660301

00:41:29.175 --> 00:41:30.454 So what made you change

NOTE Confidence: 0.9660301

00:41:30.454 --> 00:41:31.194 your mind?

NOTE Confidence: 0.9613235

00:41:31.494 --> 00:41:33.010 And he was like, there's

NOTE Confidence: 0.9613235

00:41:33.010 --> 00:41:34.770 a group of teenagers right

NOTE Confidence: 0.9613235

00:41:34.770 --> 00:41:36.210 behind me, and they keep

NOTE Confidence: 0.9613235

00:41:36.210 --> 00:41:37.890 telling me, it's not as

NOTE Confidence: 0.9613235

00:41:37.890 --> 00:41:39.830 scary. Do it. Do it.

NOTE Confidence: 0.9613235

00:41:40.050 --> 00:41:41.330 Yeah. And that's when I
NOTE Confidence: 0.9613235

00:41:41.330 --> 00:41:43.810 realized, wow. And age nine,
NOTE Confidence: 0.9613235

00:41:43.810 --> 00:41:44.770 I thought I had more
NOTE Confidence: 0.9613235

00:41:44.770 --> 00:41:45.270 time.
NOTE Confidence: 0.9407143

00:41:46.194 --> 00:41:48.035 You start caring about what
NOTE Confidence: 0.9407143

00:41:48.035 --> 00:41:49.234 other kids would think and
NOTE Confidence: 0.9407143

00:41:49.234 --> 00:41:50.775 what other peers would think.
NOTE Confidence: 0.998726

00:41:51.155 --> 00:41:51.655 Yeah.
NOTE Confidence: 0.9879556

00:41:52.114 --> 00:41:53.734 And so age nine,
NOTE Confidence: 0.99042237

00:41:54.194 --> 00:41:55.714 is sort of in the,
NOTE Confidence: 0.9772302

00:41:56.194 --> 00:41:57.734 age range that we target
NOTE Confidence: 0.9772302

00:41:57.795 --> 00:41:58.434 in our,
NOTE Confidence: 0.99967694

00:41:59.075 --> 00:41:59.575 study
NOTE Confidence: 0.96114224

00:42:00.035 --> 00:42:00.535 sample.
NOTE Confidence: 0.9441326

00:42:00.835 --> 00:42:02.660 So this give us confidence
NOTE Confidence: 0.9441326

00:42:02.799 --> 00:42:04.319 in that at least give

NOTE Confidence: 0.9441326
00:42:04.319 --> 00:42:05.059 me confidence
NOTE Confidence: 0.9653274
00:42:05.599 --> 00:42:06.880 that we are tapping into
NOTE Confidence: 0.9653274
00:42:06.880 --> 00:42:07.619 an important,
NOTE Confidence: 0.9213921
00:42:08.559 --> 00:42:09.059 phenomena.
NOTE Confidence: 0.9501463
00:42:09.599 --> 00:42:10.880 Yeah. So we wanted to
NOTE Confidence: 0.9501463
00:42:10.880 --> 00:42:12.260 use peer feedback
NOTE Confidence: 0.9405079
00:42:12.839 --> 00:42:13.339 as
NOTE Confidence: 0.94376314
00:42:13.920 --> 00:42:15.940 a stimulus in our paradigm.
NOTE Confidence: 0.96562785
00:42:17.715 --> 00:42:19.395 And this and I don't
NOTE Confidence: 0.96562785
00:42:19.395 --> 00:42:20.275 need to tell you the
NOTE Confidence: 0.96562785
00:42:20.275 --> 00:42:21.735 importance of social media
NOTE Confidence: 0.9307844
00:42:22.114 --> 00:42:23.955 and teens. So not only
NOTE Confidence: 0.9307844
00:42:23.955 --> 00:42:26.114 their real world peers has
NOTE Confidence: 0.9307844
00:42:26.114 --> 00:42:26.855 an influence
NOTE Confidence: 0.9096139
00:42:27.635 --> 00:42:29.335 on them, the peer feedback
NOTE Confidence: 0.9096139

00:42:29.395 --> 00:42:30.035 and the,
NOTE Confidence: 0.98223275

00:42:30.969 --> 00:42:32.510 like or dislike feedback,
NOTE Confidence: 0.9990475

00:42:32.890 --> 00:42:34.190 in the virtual world
NOTE Confidence: 0.9705991

00:42:34.730 --> 00:42:36.510 also has a large impact
NOTE Confidence: 0.9705991

00:42:36.650 --> 00:42:37.230 on the,
NOTE Confidence: 0.93142915

00:42:37.610 --> 00:42:38.670 kids' life.
NOTE Confidence: 0.99916685

00:42:40.650 --> 00:42:41.150 So
NOTE Confidence: 0.9972046

00:42:41.450 --> 00:42:42.510 in our study,
NOTE Confidence: 0.9997241

00:42:43.210 --> 00:42:44.989 we wanted to use peers
NOTE Confidence: 0.94827217

00:42:45.565 --> 00:42:46.925 as the source of social
NOTE Confidence: 0.94827217

00:42:46.925 --> 00:42:47.425 frustration.
NOTE Confidence: 0.98965114

00:42:48.285 --> 00:42:49.565 And but we have to
NOTE Confidence: 0.98965114

00:42:49.565 --> 00:42:51.745 make the social and nonsocial
NOTE Confidence: 0.98965114

00:42:51.885 --> 00:42:54.145 conditions as similar as possible.
NOTE Confidence: 0.946123

00:42:54.525 --> 00:42:55.905 So we had this idea
NOTE Confidence: 0.946123

00:42:56.045 --> 00:42:58.785 of showing two peer, pictures

NOTE Confidence: 0.946123

00:42:58.925 --> 00:42:59.905 side by side,

NOTE Confidence: 0.916025

00:43:00.430 --> 00:43:01.430 And we have,

NOTE Confidence: 0.9889518

00:43:01.870 --> 00:43:03.230 we told them this cover

NOTE Confidence: 0.9889518

00:43:03.230 --> 00:43:04.450 story that,

NOTE Confidence: 0.865957

00:43:04.830 --> 00:43:05.330 oh,

NOTE Confidence: 0.9640675

00:43:05.630 --> 00:43:06.670 when you come into our

NOTE Confidence: 0.9640675

00:43:06.670 --> 00:43:07.790 lab, we have to take

NOTE Confidence: 0.9640675

00:43:07.790 --> 00:43:09.469 a photo of you, and

NOTE Confidence: 0.9640675

00:43:09.469 --> 00:43:10.830 then we are gonna upload

NOTE Confidence: 0.9640675

00:43:10.830 --> 00:43:12.210 your photo onto

NOTE Confidence: 0.9878758

00:43:12.590 --> 00:43:13.250 a nationwide

NOTE Confidence: 0.9844819

00:43:14.405 --> 00:43:14.905 database,

NOTE Confidence: 0.98027086

00:43:15.925 --> 00:43:17.765 of kids that participate in

NOTE Confidence: 0.98027086

00:43:17.765 --> 00:43:20.505 this nationwide peer evaluation study.

NOTE Confidence: 0.9918637

00:43:20.885 --> 00:43:21.844 And so they'll get to

NOTE Confidence: 0.9918637

00:43:21.844 --> 00:43:23.525 see your photos and rate
NOTE Confidence: 0.9918637

00:43:23.525 --> 00:43:24.805 whether they wanna be friends
NOTE Confidence: 0.9918637

00:43:24.805 --> 00:43:26.005 with you or not, whether
NOTE Confidence: 0.9918637

00:43:26.005 --> 00:43:27.030 they like you or not.
NOTE Confidence: 0.9918637

00:43:27.350 --> 00:43:28.310 I know it's a little
NOTE Confidence: 0.9918637

00:43:28.310 --> 00:43:29.430 cruel. We had a hard
NOTE Confidence: 0.9918637

00:43:29.430 --> 00:43:30.650 time with IRB.
NOTE Confidence: 0.95777476

00:43:31.910 --> 00:43:33.130 Took us five months,
NOTE Confidence: 0.9865695

00:43:33.510 --> 00:43:35.290 to get through IRB. Yeah.
NOTE Confidence: 0.9857827

00:43:35.590 --> 00:43:36.090 And,
NOTE Confidence: 0.98141825

00:43:36.630 --> 00:43:38.150 but then we didn't, and
NOTE Confidence: 0.98141825

00:43:38.150 --> 00:43:39.765 we made them believe that
NOTE Confidence: 0.98141825

00:43:39.765 --> 00:43:40.664 they are participating
NOTE Confidence: 0.990578

00:43:40.964 --> 00:43:43.065 in this peer evaluation study.
NOTE Confidence: 0.9970371

00:43:43.684 --> 00:43:45.684 And in the scanner is
NOTE Confidence: 0.9970371

00:43:45.684 --> 00:43:47.224 when they will find out,

NOTE Confidence: 0.9950921
00:43:47.684 --> 00:43:49.285 which peers like them or
NOTE Confidence: 0.9950921
00:43:49.285 --> 00:43:50.265 dislike them.
NOTE Confidence: 0.98719895
00:43:50.565 --> 00:43:51.525 So when they come into
NOTE Confidence: 0.98719895
00:43:51.525 --> 00:43:52.265 the scan,
NOTE Confidence: 0.98673695
00:43:52.724 --> 00:43:53.960 they have to pick one
NOTE Confidence: 0.98673695
00:43:53.960 --> 00:43:54.780 of the peers,
NOTE Confidence: 0.90032274
00:43:55.640 --> 00:43:56.380 side by side.
NOTE Confidence: 0.9849027
00:43:56.760 --> 00:43:58.680 And once they make their
NOTE Confidence: 0.9849027
00:43:58.680 --> 00:44:00.599 choice, they will find out
NOTE Confidence: 0.9849027
00:44:00.599 --> 00:44:02.140 whether the peer like them
NOTE Confidence: 0.9849027
00:44:02.359 --> 00:44:03.819 or dislike them.
NOTE Confidence: 0.9676938
00:44:04.200 --> 00:44:05.420 Yeah. And similarly
NOTE Confidence: 0.853442
00:44:05.880 --> 00:44:07.719 to the nonsocial, the doors
NOTE Confidence: 0.853442
00:44:07.719 --> 00:44:08.219 condition,
NOTE Confidence: 0.84925425
00:44:09.785 --> 00:44:11.885 We condition them to expect,
NOTE Confidence: 0.8939101

00:44:12.345 --> 00:44:14.265 more positive reward in the
NOTE Confidence: 0.8939101

00:44:14.265 --> 00:44:14.765 beginning.
NOTE Confidence: 0.9728013

00:44:15.465 --> 00:44:16.925 So eighty percent positive,
NOTE Confidence: 0.95589757

00:44:17.705 --> 00:44:18.205 feedback.
NOTE Confidence: 0.9977825

00:44:18.745 --> 00:44:20.445 And then we start frustrating
NOTE Confidence: 0.9977825

00:44:20.505 --> 00:44:22.045 them by giving them more
NOTE Confidence: 0.8925526

00:44:22.505 --> 00:44:23.325 negative feedback.
NOTE Confidence: 0.8839142

00:44:23.640 --> 00:44:25.400 Yeah. Now in during the
NOTE Confidence: 0.8839142

00:44:25.400 --> 00:44:27.180 frustration block, can they receive,
NOTE Confidence: 0.9994543

00:44:27.719 --> 00:44:28.219 mostly
NOTE Confidence: 0.95787233

00:44:28.520 --> 00:44:29.020 dislike
NOTE Confidence: 0.9263647

00:44:29.719 --> 00:44:30.539 feedback? And then,
NOTE Confidence: 0.9674975

00:44:30.920 --> 00:44:33.079 in the recovery block, reverted
NOTE Confidence: 0.9674975

00:44:33.079 --> 00:44:35.180 back to the original block
NOTE Confidence: 0.93002784

00:44:35.480 --> 00:44:37.400 with more yes, Amanda? How
NOTE Confidence: 0.93002784

00:44:37.400 --> 00:44:38.085 long is each

NOTE Confidence: 0.92495334
00:44:39.125 --> 00:44:40.585 block? How long? About,
NOTE Confidence: 0.9774145
00:44:41.285 --> 00:44:42.565 each run is about six
NOTE Confidence: 0.9774145
00:44:42.565 --> 00:44:44.645 minutes, so twelve minutes each
NOTE Confidence: 0.9774145
00:44:44.645 --> 00:44:46.185 block. Yeah. Mhmm.
NOTE Confidence: 0.98890966
00:44:46.565 --> 00:44:47.065 Yeah.
NOTE Confidence: 0.99370897
00:44:48.165 --> 00:44:49.625 And throughout the task,
NOTE Confidence: 0.9555542
00:44:49.925 --> 00:44:51.525 they have to rate, how
NOTE Confidence: 0.9555542
00:44:51.525 --> 00:44:53.285 frustrated they feel and how
NOTE Confidence: 0.9555542
00:44:53.285 --> 00:44:55.250 sad or unhappy they feel
NOTE Confidence: 0.9555542
00:44:55.250 --> 00:44:55.750 using
NOTE Confidence: 0.9830177
00:44:56.130 --> 00:44:57.330 a scale from one to
NOTE Confidence: 0.9830177
00:44:57.330 --> 00:44:59.090 nine. So one is not
NOTE Confidence: 0.9830177
00:44:59.090 --> 00:45:01.010 frustrated at all to nine
NOTE Confidence: 0.9830177
00:45:01.010 --> 00:45:02.790 feeling, completely frustrated
NOTE Confidence: 0.9997041
00:45:03.330 --> 00:45:04.390 extremely frustrated.
NOTE Confidence: 0.9983076

00:45:06.545 --> 00:45:07.825 So here is some of
NOTE Confidence: 0.9983076

00:45:07.825 --> 00:45:08.725 our preliminary
NOTE Confidence: 0.9887543

00:45:09.105 --> 00:45:10.864 results from fifty four kids,
NOTE Confidence: 0.9887543

00:45:11.105 --> 00:45:11.985 that we have,
NOTE Confidence: 0.9849689

00:45:12.705 --> 00:45:14.165 analyzed the data for.
NOTE Confidence: 0.98743063

00:45:14.785 --> 00:45:15.985 And so on the left
NOTE Confidence: 0.98743063

00:45:15.985 --> 00:45:16.725 side here
NOTE Confidence: 0.95415205

00:45:17.025 --> 00:45:18.165 is the nonsocial
NOTE Confidence: 0.928116

00:45:19.469 --> 00:45:21.250 frustration, frustration that they feel
NOTE Confidence: 0.928116

00:45:21.310 --> 00:45:22.690 during nonsocial condition.
NOTE Confidence: 0.97666836

00:45:23.150 --> 00:45:24.190 And on the right here
NOTE Confidence: 0.97666836

00:45:24.190 --> 00:45:25.489 is the social conditions.
NOTE Confidence: 0.9325525

00:45:25.950 --> 00:45:27.890 And these are individual subjects,
NOTE Confidence: 0.9963018

00:45:28.350 --> 00:45:29.950 ratings over the course of
NOTE Confidence: 0.9963018

00:45:29.950 --> 00:45:31.010 the three blocks.
NOTE Confidence: 0.9715151

00:45:31.515 --> 00:45:32.954 And if you average all

NOTE Confidence: 0.9715151
00:45:32.954 --> 00:45:34.174 of the lines together,
NOTE Confidence: 0.9578529
00:45:34.555 --> 00:45:35.755 this is what the group
NOTE Confidence: 0.9578529
00:45:35.755 --> 00:45:37.055 rating look like.
NOTE Confidence: 0.99602073
00:45:37.434 --> 00:45:38.875 So you can see that
NOTE Confidence: 0.99602073
00:45:38.875 --> 00:45:40.315 the two curves are very
NOTE Confidence: 0.99602073
00:45:40.315 --> 00:45:41.295 similar. Right?
NOTE Confidence: 0.9680295
00:45:41.594 --> 00:45:42.075 But,
NOTE Confidence: 0.9360182
00:45:43.114 --> 00:45:44.880 they they both show,
NOTE Confidence: 0.9931889
00:45:45.519 --> 00:45:47.299 elevated frustration level
NOTE Confidence: 0.99607754
00:45:47.599 --> 00:45:49.219 during the frustration block
NOTE Confidence: 0.99610436
00:45:49.680 --> 00:45:51.599 compared to the baseline or
NOTE Confidence: 0.99610436
00:45:51.599 --> 00:45:52.739 recovery block.
NOTE Confidence: 0.9908431
00:45:53.279 --> 00:45:54.400 And so even though the
NOTE Confidence: 0.9908431
00:45:54.400 --> 00:45:55.539 recovery block,
NOTE Confidence: 0.9929378
00:45:56.000 --> 00:45:58.185 the frustration level dropped, but
NOTE Confidence: 0.9929378

00:45:58.185 --> 00:46:00.045 it remains slightly elevated,
NOTE Confidence: 0.90532243

00:46:00.665 --> 00:46:02.125 and not returned to baseline.
NOTE Confidence: 0.9963716

00:46:02.985 --> 00:46:04.185 Right? And so this is
NOTE Confidence: 0.9963716

00:46:04.185 --> 00:46:05.245 still significant.
NOTE Confidence: 0.9324002

00:46:08.025 --> 00:46:09.885 And this goes to illustrate
NOTE Confidence: 0.9324002

00:46:09.945 --> 00:46:11.725 that indeed our task manipulation
NOTE Confidence: 0.9549288

00:46:12.185 --> 00:46:13.645 works. Yeah. And
NOTE Confidence: 0.973664

00:46:13.969 --> 00:46:15.730 peers could be used as
NOTE Confidence: 0.973664

00:46:15.730 --> 00:46:17.270 a source of, frustration.
NOTE Confidence: 0.8953163

00:46:18.289 --> 00:46:19.890 Yeah. And socially
NOTE Confidence: 0.98959434

00:46:20.289 --> 00:46:22.369 social and nonsocial frustrations are
NOTE Confidence: 0.98959434

00:46:22.369 --> 00:46:24.549 equally frustrating. There's no differences
NOTE Confidence: 0.98959434

00:46:24.770 --> 00:46:26.549 in in terms of their,
NOTE Confidence: 0.7574358

00:46:27.250 --> 00:46:28.309 effective ratings.
NOTE Confidence: 0.93638825

00:46:30.275 --> 00:46:31.015 And so,
NOTE Confidence: 0.9711004

00:46:32.114 --> 00:46:33.475 and we found that the

NOTE Confidence: 0.9711004

00:46:33.475 --> 00:46:35.235 levels of frustration that they

NOTE Confidence: 0.9711004

00:46:35.235 --> 00:46:36.614 feel is significantly

NOTE Confidence: 0.8177024

00:46:36.915 --> 00:46:37.415 related,

NOTE Confidence: 0.99634343

00:46:37.875 --> 00:46:38.375 to

NOTE Confidence: 0.9941936

00:46:38.755 --> 00:46:40.755 their irritability in the real

NOTE Confidence: 0.9941936

00:46:40.755 --> 00:46:41.255 world.

NOTE Confidence: 0.9717403

00:46:41.760 --> 00:46:43.440 So the more irritable the

NOTE Confidence: 0.9717403

00:46:43.440 --> 00:46:44.980 child is in general,

NOTE Confidence: 0.99511015

00:46:45.840 --> 00:46:47.760 the more frustrated they get,

NOTE Confidence: 0.97466964

00:46:48.320 --> 00:46:50.500 especially during the frustration block

NOTE Confidence: 0.97466964

00:46:50.560 --> 00:46:52.500 and during the baseline block.

NOTE Confidence: 0.98399335

00:46:55.545 --> 00:46:56.585 So we wanted to see

NOTE Confidence: 0.98399335

00:46:56.585 --> 00:46:57.085 whether,

NOTE Confidence: 0.96977776

00:46:57.464 --> 00:46:59.325 the social and nonsocial frustration

NOTE Confidence: 0.9558305

00:46:59.625 --> 00:47:00.825 differ in terms of the

NOTE Confidence: 0.9558305

00:47:00.825 --> 00:47:01.325 neural
NOTE Confidence: 0.8884671

00:47:01.864 --> 00:47:02.364 responses.
NOTE Confidence: 0.97526395

00:47:03.145 --> 00:47:03.645 And,
NOTE Confidence: 0.84773064

00:47:05.065 --> 00:47:06.125 this is a little,
NOTE Confidence: 0.9389339

00:47:07.065 --> 00:47:08.880 out of sorts, but, k.
NOTE Confidence: 0.9389339

00:47:08.880 --> 00:47:09.380 Please
NOTE Confidence: 0.97374195

00:47:10.000 --> 00:47:11.279 ignore. So the bottom line
NOTE Confidence: 0.97374195

00:47:11.279 --> 00:47:12.640 is that we didn't find
NOTE Confidence: 0.97374195

00:47:12.640 --> 00:47:14.339 any differences in between,
NOTE Confidence: 0.8621754

00:47:14.799 --> 00:47:17.039 neural responses in social versus
NOTE Confidence: 0.8621754

00:47:17.039 --> 00:47:18.260 nonsocial frustration.
NOTE Confidence: 0.98422635

00:47:19.200 --> 00:47:19.700 But,
NOTE Confidence: 0.93037784

00:47:20.400 --> 00:47:21.539 the degree
NOTE Confidence: 0.9872427

00:47:22.000 --> 00:47:23.405 of the differences,
NOTE Confidence: 0.97955376

00:47:24.265 --> 00:47:26.205 when viewing social versus nonsocial
NOTE Confidence: 0.97955376

00:47:26.344 --> 00:47:26.844 frustration

NOTE Confidence: 0.9858016
00:47:27.625 --> 00:47:28.364 is associated
NOTE Confidence: 0.89940494
00:47:28.745 --> 00:47:30.445 with participants' irritability
NOTE Confidence: 0.91693354
00:47:31.065 --> 00:47:31.565 irritability
NOTE Confidence: 0.9630475
00:47:32.265 --> 00:47:32.765 level,
NOTE Confidence: 0.9895323
00:47:33.225 --> 00:47:35.510 especially in regions such as
NOTE Confidence: 0.9895323
00:47:35.510 --> 00:47:36.010 insula,
NOTE Confidence: 0.9985012
00:47:36.469 --> 00:47:36.969 thalamus,
NOTE Confidence: 0.9427198
00:47:37.589 --> 00:47:38.570 parietal lobule,
NOTE Confidence: 0.99917394
00:47:38.950 --> 00:47:41.030 which are regions important for
NOTE Confidence: 0.99917394
00:47:41.030 --> 00:47:42.170 sensory information
NOTE Confidence: 0.9867154
00:47:42.630 --> 00:47:43.130 processing
NOTE Confidence: 0.99754703
00:47:43.430 --> 00:47:44.250 and integration.
NOTE Confidence: 0.9912897
00:47:45.270 --> 00:47:46.550 And so what we found
NOTE Confidence: 0.9912897
00:47:46.550 --> 00:47:48.010 is that the more irritable
NOTE Confidence: 0.9912897
00:47:48.150 --> 00:47:49.430 the child is in the
NOTE Confidence: 0.9912897

00:47:49.430 --> 00:47:50.330 real world,
NOTE Confidence: 0.999772

00:47:50.775 --> 00:47:52.954 the more activation they have
NOTE Confidence: 0.999772

00:47:53.094 --> 00:47:54.234 in those regions
NOTE Confidence: 0.9799813

00:47:54.775 --> 00:47:56.555 in response to nonsocial
NOTE Confidence: 0.9962915

00:47:57.094 --> 00:47:58.954 compared to social feedback.
NOTE Confidence: 0.9555252

00:47:59.494 --> 00:48:01.094 Yeah. So they tend to
NOTE Confidence: 0.9555252

00:48:01.094 --> 00:48:03.194 show a little more, neuroactivation,
NOTE Confidence: 0.99620485

00:48:04.214 --> 00:48:05.194 to the nonsocial
NOTE Confidence: 0.9837214

00:48:05.770 --> 00:48:06.270 frustration.
NOTE Confidence: 0.85916406

00:48:08.810 --> 00:48:09.310 K.
NOTE Confidence: 0.99565804

00:48:10.570 --> 00:48:11.930 So I wanna are we
NOTE Confidence: 0.99565804

00:48:11.930 --> 00:48:12.989 good on time?
NOTE Confidence: 0.9490432

00:48:13.690 --> 00:48:15.790 Five minutes? Okay. I wanna
NOTE Confidence: 0.9490432

00:48:15.930 --> 00:48:17.610 switch gear a little bit
NOTE Confidence: 0.9490432

00:48:17.610 --> 00:48:19.530 and quickly tell you a
NOTE Confidence: 0.9490432

00:48:19.530 --> 00:48:21.744 pilot on TMS that we

NOTE Confidence: 0.9490432
00:48:21.744 --> 00:48:23.265 can we are conducting in
NOTE Confidence: 0.9490432
00:48:23.265 --> 00:48:23.765 adults,
NOTE Confidence: 0.9339395
00:48:24.945 --> 00:48:26.224 to try to use our
NOTE Confidence: 0.9339395
00:48:26.224 --> 00:48:26.724 neuromodulations
NOTE Confidence: 0.9940323
00:48:27.505 --> 00:48:29.984 as a potential approach to
NOTE Confidence: 0.9940323
00:48:29.984 --> 00:48:30.964 reduce irritability.
NOTE Confidence: 0.95957977
00:48:31.984 --> 00:48:32.625 And so,
NOTE Confidence: 0.9969743
00:48:33.840 --> 00:48:35.280 I probably don't need to
NOTE Confidence: 0.9969743
00:48:35.280 --> 00:48:36.020 tell you,
NOTE Confidence: 0.9014617
00:48:36.480 --> 00:48:36.980 that,
NOTE Confidence: 0.97325826
00:48:37.680 --> 00:48:40.000 many adults feel frustrated or
NOTE Confidence: 0.97325826
00:48:40.000 --> 00:48:41.760 irritable at some point during
NOTE Confidence: 0.97325826
00:48:41.760 --> 00:48:42.500 their life,
NOTE Confidence: 0.9881152
00:48:42.880 --> 00:48:44.480 and especially when you're stuck
NOTE Confidence: 0.9881152
00:48:44.480 --> 00:48:46.100 in bumper to bumper traffic
NOTE Confidence: 0.9893162

00:48:46.775 --> 00:48:48.535 or waiting a long time
NOTE Confidence: 0.9893162

00:48:48.535 --> 00:48:50.215 and finally got somebody on
NOTE Confidence: 0.9893162

00:48:50.215 --> 00:48:50.715 the
NOTE Confidence: 0.9945356

00:48:51.015 --> 00:48:52.075 on the phone,
NOTE Confidence: 0.97896034

00:48:52.535 --> 00:48:53.895 but they're not being very
NOTE Confidence: 0.97896034

00:48:53.895 --> 00:48:54.395 helpful.
NOTE Confidence: 0.9726858

00:48:55.094 --> 00:48:55.594 And
NOTE Confidence: 0.97203815

00:48:56.135 --> 00:48:57.255 or after a long day
NOTE Confidence: 0.97203815

00:48:57.255 --> 00:48:58.295 at work, you come home
NOTE Confidence: 0.97203815

00:48:58.295 --> 00:48:59.035 to a mess.
NOTE Confidence: 0.96251655

00:48:59.850 --> 00:49:01.210 Or when you're dealing with
NOTE Confidence: 0.96251655

00:49:01.210 --> 00:49:02.650 a deadline, but a computer
NOTE Confidence: 0.96251655

00:49:02.650 --> 00:49:05.050 keep crashing on you. Yeah.
NOTE Confidence: 0.96251655

00:49:05.050 --> 00:49:06.570 Or your favorite sports team
NOTE Confidence: 0.96251655

00:49:06.570 --> 00:49:07.610 is losing a game that
NOTE Confidence: 0.96251655

00:49:07.610 --> 00:49:09.150 they're not supposed to lose.

NOTE Confidence: 0.91351116
00:49:10.890 --> 00:49:12.250 Yeah. So turns out your
NOTE Confidence: 0.91351116
00:49:12.250 --> 00:49:14.090 ability is very common, and
NOTE Confidence: 0.91351116
00:49:14.090 --> 00:49:15.605 this is backed by data,
NOTE Confidence: 0.86881053
00:49:16.545 --> 00:49:17.445 of a
NOTE Confidence: 0.96536165
00:49:18.065 --> 00:49:20.225 study recently published by doctor
NOTE Confidence: 0.96536165
00:49:20.225 --> 00:49:20.725 Perlis
NOTE Confidence: 0.9966418
00:49:21.185 --> 00:49:23.205 of over forty two thousand
NOTE Confidence: 0.9966418
00:49:23.265 --> 00:49:25.265 adults across fifty states in
NOTE Confidence: 0.9966418
00:49:25.265 --> 00:49:26.165 the US.
NOTE Confidence: 0.9854085
00:49:26.545 --> 00:49:27.905 And so the adults are
NOTE Confidence: 0.9854085
00:49:27.905 --> 00:49:29.985 eighteen to, sixty five years
NOTE Confidence: 0.9854085
00:49:29.985 --> 00:49:30.570 of age
NOTE Confidence: 0.98831564
00:49:31.530 --> 00:49:32.890 and, a little over half
NOTE Confidence: 0.98831564
00:49:32.890 --> 00:49:33.630 are female.
NOTE Confidence: 0.9807643
00:49:34.170 --> 00:49:35.630 So they have a survey
NOTE Confidence: 0.9807643

00:49:35.690 --> 00:49:37.070 asking about irritability
NOTE Confidence: 0.9825194

00:49:37.450 --> 00:49:38.989 using those five items.
NOTE Confidence: 0.9924479

00:49:39.370 --> 00:49:40.489 And what they found is
NOTE Confidence: 0.9924479

00:49:40.489 --> 00:49:40.989 that,
NOTE Confidence: 0.8801369

00:49:42.330 --> 00:49:43.710 the average irritability
NOTE Confidence: 0.9960832

00:49:44.489 --> 00:49:46.694 score is thirteen point six
NOTE Confidence: 0.9960832

00:49:46.694 --> 00:49:47.815 on a scale from one
NOTE Confidence: 0.9960832

00:49:47.815 --> 00:49:48.214 to
NOTE Confidence: 0.9456836

00:49:49.015 --> 00:49:50.474 from five to thirty.
NOTE Confidence: 0.98646545

00:49:51.094 --> 00:49:53.434 And this translate to endorsing
NOTE Confidence: 0.8884684

00:49:54.214 --> 00:49:54.714 sometimes,
NOTE Confidence: 0.9604697

00:49:55.335 --> 00:49:56.694 at least three plus,
NOTE Confidence: 0.9771276

00:49:57.575 --> 00:49:58.775 three or more of the
NOTE Confidence: 0.9771276

00:49:58.775 --> 00:49:59.275 irritability
NOTE Confidence: 0.99822974

00:49:59.575 --> 00:50:01.440 symptoms in here. Yeah. You
NOTE Confidence: 0.99822974

00:50:01.440 --> 00:50:02.719 can probably all relate to

NOTE Confidence: 0.99822974
00:50:02.719 --> 00:50:04.420 some of those symptoms. Right?
NOTE Confidence: 0.97849774
00:50:06.080 --> 00:50:08.020 And irritability is more,
NOTE Confidence: 0.78529674
00:50:09.280 --> 00:50:09.780 increased
NOTE Confidence: 0.9968872
00:50:10.160 --> 00:50:10.900 in female
NOTE Confidence: 0.9854326
00:50:11.280 --> 00:50:13.359 and in younger adults and
NOTE Confidence: 0.9854326
00:50:13.359 --> 00:50:15.219 in those with lower SES.
NOTE Confidence: 0.99922603
00:50:16.655 --> 00:50:18.494 And it is especially high
NOTE Confidence: 0.99922603
00:50:18.494 --> 00:50:19.715 in those with depressive
NOTE Confidence: 0.9998144
00:50:20.094 --> 00:50:20.994 and anxiety
NOTE Confidence: 0.99059165
00:50:21.295 --> 00:50:21.795 disorders.
NOTE Confidence: 0.9982244
00:50:22.895 --> 00:50:24.675 And even in those without
NOTE Confidence: 0.9992382
00:50:25.055 --> 00:50:26.994 depressive or anxiety symptoms,
NOTE Confidence: 0.99960214
00:50:27.535 --> 00:50:28.835 about two percent
NOTE Confidence: 0.8517234
00:50:29.310 --> 00:50:30.370 also endorse,
NOTE Confidence: 0.6548357
00:50:31.070 --> 00:50:31.890 if experiencing
NOTE Confidence: 0.98831207

00:50:32.270 --> 00:50:32.770 irritability.
NOTE Confidence: 0.99202585

00:50:33.550 --> 00:50:34.510 So it is a very
NOTE Confidence: 0.99202585

00:50:34.510 --> 00:50:35.010 common,
NOTE Confidence: 0.8796717

00:50:35.469 --> 00:50:35.969 problem.
NOTE Confidence: 0.913119

00:50:36.910 --> 00:50:39.969 And it's also significantly linked
NOTE Confidence: 0.913119

00:50:40.030 --> 00:50:40.530 to
NOTE Confidence: 0.9702902

00:50:40.830 --> 00:50:41.810 thoughts of suicide
NOTE Confidence: 0.9577513

00:50:42.375 --> 00:50:43.735 even among some of the,
NOTE Confidence: 0.9577513

00:50:44.055 --> 00:50:45.895 sort of robust predictors such
NOTE Confidence: 0.9577513

00:50:45.895 --> 00:50:47.114 as, urbanacity.
NOTE Confidence: 0.9295149

00:50:47.975 --> 00:50:48.795 Yeah. Irritability
NOTE Confidence: 0.99871534

00:50:49.415 --> 00:50:50.955 emerged as a predictor
NOTE Confidence: 0.99647707

00:50:51.335 --> 00:50:51.995 of suicidality.
NOTE Confidence: 0.8354515

00:50:56.020 --> 00:50:56.819 K. So,
NOTE Confidence: 0.97520953

00:50:57.299 --> 00:50:58.900 here is our attempt to
NOTE Confidence: 0.97520953

00:50:58.900 --> 00:51:00.180 try to use TMS to

NOTE Confidence: 0.97520953
00:51:00.180 --> 00:51:01.079 reduce irritability,
NOTE Confidence: 0.9822615
00:51:01.540 --> 00:51:02.819 and this is a work,
NOTE Confidence: 0.9822615
00:51:03.059 --> 00:51:03.559 by,
NOTE Confidence: 0.84540474
00:51:04.099 --> 00:51:05.940 me and doctor Von Steele
NOTE Confidence: 0.84540474
00:51:05.940 --> 00:51:06.839 from psychiatry.
NOTE Confidence: 0.9707764
00:51:07.140 --> 00:51:08.500 And it's supported by a
NOTE Confidence: 0.9707764
00:51:08.500 --> 00:51:09.960 pilot grant that we obtained
NOTE Confidence: 0.8487185
00:51:10.344 --> 00:51:11.705 through Center for Brain and
NOTE Confidence: 0.8487185
00:51:11.705 --> 00:51:12.364 My Health.
NOTE Confidence: 0.98526514
00:51:12.665 --> 00:51:13.885 And so we initially,
NOTE Confidence: 0.98712194
00:51:15.145 --> 00:51:16.925 had the thought of translating
NOTE Confidence: 0.98712194
00:51:17.145 --> 00:51:18.185 one of the study that
NOTE Confidence: 0.98712194
00:51:18.185 --> 00:51:20.105 we've, study finding that I
NOTE Confidence: 0.98712194
00:51:20.105 --> 00:51:20.605 found
NOTE Confidence: 0.87447715
00:51:20.905 --> 00:51:22.585 in adolescents. So kids and
NOTE Confidence: 0.87447715

00:51:22.585 --> 00:51:23.085 adolescents.
NOTE Confidence: 0.92059183

00:51:23.890 --> 00:51:24.930 But we thought it will
NOTE Confidence: 0.92059183

00:51:24.930 --> 00:51:25.590 be premature,
NOTE Confidence: 0.9957462

00:51:26.290 --> 00:51:28.050 to do a TMS study
NOTE Confidence: 0.9957462

00:51:28.050 --> 00:51:28.710 in kids.
NOTE Confidence: 0.9495776

00:51:29.010 --> 00:51:30.050 Yeah. And it will not
NOTE Confidence: 0.9495776

00:51:30.050 --> 00:51:31.510 be very, feasible
NOTE Confidence: 0.90389407

00:51:31.810 --> 00:51:33.510 and or accepted by families.
NOTE Confidence: 0.9261498

00:51:33.890 --> 00:51:35.489 So we wanted to try
NOTE Confidence: 0.9261498

00:51:35.489 --> 00:51:37.010 in young adults and see
NOTE Confidence: 0.9261498

00:51:37.010 --> 00:51:38.385 if we it's effective
NOTE Confidence: 0.89159817

00:51:38.765 --> 00:51:40.845 before we down translate into
NOTE Confidence: 0.89159817

00:51:40.845 --> 00:51:41.345 adolescence.
NOTE Confidence: 0.9748105

00:51:42.125 --> 00:51:43.445 And so this is informed,
NOTE Confidence: 0.99975497

00:51:43.885 --> 00:51:44.385 by
NOTE Confidence: 0.9012408

00:51:44.925 --> 00:51:46.845 a a study that I

NOTE Confidence: 0.9012408
00:51:46.845 --> 00:51:48.785 found and that's published in,
NOTE Confidence: 0.99922657
00:51:49.645 --> 00:51:50.625 twenty nineteen
NOTE Confidence: 0.990313
00:51:50.950 --> 00:51:52.630 and using the frustration paradigm
NOTE Confidence: 0.990313
00:51:52.630 --> 00:51:53.770 that I talked about.
NOTE Confidence: 0.99025184
00:51:54.310 --> 00:51:56.150 And in this study, we
NOTE Confidence: 0.99025184
00:51:56.150 --> 00:51:58.710 found that higher irritability is
NOTE Confidence: 0.99025184
00:51:58.710 --> 00:52:00.330 related to increased,
NOTE Confidence: 0.99929464
00:52:00.870 --> 00:52:01.370 activations
NOTE Confidence: 0.9010878
00:52:02.310 --> 00:52:02.710 in,
NOTE Confidence: 0.8244888
00:52:03.110 --> 00:52:05.450 pre in frontal striatal regions.
NOTE Confidence: 0.95967937
00:52:05.785 --> 00:52:06.525 So especially,
NOTE Confidence: 0.8981515
00:52:07.305 --> 00:52:10.344 singular gyrus, dorsal singular dorsal
NOTE Confidence: 0.8981515
00:52:10.344 --> 00:52:12.605 anterior singular gyrus in particular.
NOTE Confidence: 0.9919918
00:52:13.145 --> 00:52:15.085 And we also found, increased
NOTE Confidence: 0.9919918
00:52:15.145 --> 00:52:15.645 activations
NOTE Confidence: 0.98647404

00:52:16.025 --> 00:52:18.605 in dorsal lateral prefrontal cortex
NOTE Confidence: 0.98647404

00:52:18.665 --> 00:52:19.485 and caudate.
NOTE Confidence: 0.9722475

00:52:20.190 --> 00:52:21.730 And so we wanted to,
NOTE Confidence: 0.96558505

00:52:22.270 --> 00:52:24.530 target this frontal striatal circuit.
NOTE Confidence: 0.96162045

00:52:25.070 --> 00:52:26.190 And so we look into
NOTE Confidence: 0.96162045

00:52:26.190 --> 00:52:27.630 the data that we have
NOTE Confidence: 0.96162045

00:52:27.630 --> 00:52:29.310 by focusing on the older
NOTE Confidence: 0.96162045

00:52:29.310 --> 00:52:30.930 kids, so the late adolescents,
NOTE Confidence: 0.9953524

00:52:32.424 --> 00:52:33.944 hoping that the data will
NOTE Confidence: 0.9953524

00:52:33.944 --> 00:52:35.305 be close enough to our
NOTE Confidence: 0.9953524

00:52:35.464 --> 00:52:37.385 the young adult population that
NOTE Confidence: 0.9953524

00:52:37.385 --> 00:52:38.444 we try to target.
NOTE Confidence: 0.96187985

00:52:38.904 --> 00:52:40.204 And so what we found
NOTE Confidence: 0.96187985

00:52:40.265 --> 00:52:42.344 when we focus on, the
NOTE Confidence: 0.96187985

00:52:42.344 --> 00:52:44.585 connectivity between the frontal striatal
NOTE Confidence: 0.96187985

00:52:44.585 --> 00:52:45.085 region

NOTE Confidence: 0.9997445
00:52:45.900 --> 00:52:46.400 is
NOTE Confidence: 0.88186395
00:52:46.859 --> 00:52:49.119 that when when lay adolescents
NOTE Confidence: 0.9597746
00:52:49.420 --> 00:52:50.160 were frustrated,
NOTE Confidence: 0.98131454
00:52:50.619 --> 00:52:52.400 they tend to show decreased
NOTE Confidence: 0.98131454
00:52:52.539 --> 00:52:53.520 frontal striatal,
NOTE Confidence: 0.92140436
00:52:54.059 --> 00:52:54.559 connectivity.
NOTE Confidence: 0.96817976
00:52:55.900 --> 00:52:56.700 And this is,
NOTE Confidence: 0.93761075
00:52:57.660 --> 00:52:59.359 even more pronounced when,
NOTE Confidence: 0.992445
00:52:59.985 --> 00:53:01.605 for those with high irritability.
NOTE Confidence: 0.99006224
00:53:02.225 --> 00:53:03.425 So the one with high
NOTE Confidence: 0.99006224
00:53:03.425 --> 00:53:03.925 irritability
NOTE Confidence: 0.9534258
00:53:04.305 --> 00:53:06.305 show more higher degrees of
NOTE Confidence: 0.9534258
00:53:06.305 --> 00:53:06.805 decreased,
NOTE Confidence: 0.98932
00:53:07.265 --> 00:53:07.765 connectivity.
NOTE Confidence: 0.99492866
00:53:10.065 --> 00:53:11.905 And we also needed to
NOTE Confidence: 0.99492866

00:53:11.905 --> 00:53:13.745 illustrate that we could use
NOTE Confidence: 0.99492866

00:53:13.745 --> 00:53:15.285 the same frustration paradigm
NOTE Confidence: 0.8966213

00:53:15.860 --> 00:53:18.360 to, frustrate adults. So indeed,
NOTE Confidence: 0.8966213

00:53:18.420 --> 00:53:20.260 we did. And in seventy
NOTE Confidence: 0.8966213

00:53:20.260 --> 00:53:21.320 two young adults,
NOTE Confidence: 0.9974126

00:53:22.020 --> 00:53:22.520 that
NOTE Confidence: 0.9077977

00:53:24.100 --> 00:53:25.560 we, have them do this
NOTE Confidence: 0.9077977

00:53:25.700 --> 00:53:27.700 frustration paradigms for, and this
NOTE Confidence: 0.9077977

00:53:27.700 --> 00:53:29.415 is supported by the child
NOTE Confidence: 0.9077977

00:53:29.415 --> 00:53:30.635 study center faculty
NOTE Confidence: 0.9351318

00:53:30.935 --> 00:53:31.995 development award.
NOTE Confidence: 0.9651354

00:53:33.415 --> 00:53:34.155 We can't,
NOTE Confidence: 0.99065536

00:53:34.535 --> 00:53:36.055 use the same paradigm that
NOTE Confidence: 0.99065536

00:53:36.055 --> 00:53:37.915 we frustrate kids to frustrate
NOTE Confidence: 0.99065536

00:53:38.055 --> 00:53:38.555 adults.
NOTE Confidence: 0.98390675

00:53:39.015 --> 00:53:39.755 And so,

NOTE Confidence: 0.99914014
00:53:40.215 --> 00:53:40.455 when
NOTE Confidence: 0.96303034
00:53:41.330 --> 00:53:43.190 during the frustration runs,
NOTE Confidence: 0.92342025
00:53:43.489 --> 00:53:46.290 young adults reported increased levels
NOTE Confidence: 0.92342025
00:53:46.290 --> 00:53:46.950 of frustration
NOTE Confidence: 0.9568757
00:53:47.250 --> 00:53:47.989 or unhappiness,
NOTE Confidence: 0.9237867
00:53:48.850 --> 00:53:50.530 and this tracks with on
NOTE Confidence: 0.9237867
00:53:50.530 --> 00:53:51.910 the levels of irritability
NOTE Confidence: 0.99824953
00:53:52.290 --> 00:53:54.290 symptoms that they experience in
NOTE Confidence: 0.99824953
00:53:54.290 --> 00:53:55.270 daily life.
NOTE Confidence: 0.95657736
00:53:57.455 --> 00:53:58.575 And I mentioned to you
NOTE Confidence: 0.95657736
00:53:58.575 --> 00:54:00.575 earlier that motor in motor
NOTE Confidence: 0.95657736
00:54:00.575 --> 00:54:01.075 activities
NOTE Confidence: 0.8918849
00:54:01.535 --> 00:54:03.875 is a robust across species,
NOTE Confidence: 0.9596964
00:54:04.735 --> 00:54:07.395 indicator of frustrate frustration responses.
NOTE Confidence: 0.94373405
00:54:08.094 --> 00:54:09.775 So we wanted to also
NOTE Confidence: 0.94373405

00:54:09.775 --> 00:54:11.395 use a motor activity
NOTE Confidence: 0.96316016

00:54:11.775 --> 00:54:12.515 as a
NOTE Confidence: 0.9746098

00:54:12.830 --> 00:54:13.650 sort of marker,
NOTE Confidence: 0.97256285

00:54:14.270 --> 00:54:15.170 for frustration.
NOTE Confidence: 0.9967489

00:54:15.790 --> 00:54:16.750 And so we did a
NOTE Confidence: 0.9967489

00:54:16.750 --> 00:54:18.530 pilot study in fourteen,
NOTE Confidence: 0.914201

00:54:19.230 --> 00:54:20.050 young adults,
NOTE Confidence: 0.9781531

00:54:20.670 --> 00:54:22.190 and we use this device
NOTE Confidence: 0.9781531

00:54:22.190 --> 00:54:23.010 called dynamometer
NOTE Confidence: 0.97813696

00:54:23.630 --> 00:54:25.489 that will measure how hard
NOTE Confidence: 0.97813696

00:54:25.550 --> 00:54:27.545 they grip, how hard they
NOTE Confidence: 0.97813696

00:54:27.545 --> 00:54:28.045 exert,
NOTE Confidence: 0.9791992

00:54:28.744 --> 00:54:30.684 motor effort while they're responding
NOTE Confidence: 0.9791992

00:54:30.744 --> 00:54:31.565 to the task.
NOTE Confidence: 0.9577535

00:54:32.105 --> 00:54:33.944 And, indeed, we found that
NOTE Confidence: 0.9577535

00:54:33.944 --> 00:54:36.045 when participants were frustrated

NOTE Confidence: 0.945629
00:54:36.744 --> 00:54:38.505 compared to before frustration and
NOTE Confidence: 0.945629
00:54:38.505 --> 00:54:39.239 after frustration,
NOTE Confidence: 0.92870945
00:54:40.119 --> 00:54:42.040 They show this increased grip
NOTE Confidence: 0.92870945
00:54:42.040 --> 00:54:42.540 force,
NOTE Confidence: 0.9845158
00:54:43.000 --> 00:54:44.540 yeah, while they were frustrated.
NOTE Confidence: 0.9498899
00:54:47.160 --> 00:54:48.920 So seems like, we do
NOTE Confidence: 0.9498899
00:54:48.920 --> 00:54:49.980 have some studies,
NOTE Confidence: 0.95784134
00:54:50.600 --> 00:54:52.200 some data that suggests that
NOTE Confidence: 0.95784134
00:54:52.200 --> 00:54:54.219 frustration is related to
NOTE Confidence: 0.8781365
00:54:54.585 --> 00:54:55.405 decreased frontostriatal
NOTE Confidence: 0.9992176
00:54:56.025 --> 00:54:56.525 connectivity,
NOTE Confidence: 0.9569722
00:54:57.385 --> 00:54:58.685 increased motor activity,
NOTE Confidence: 0.961411
00:54:59.145 --> 00:55:01.165 and increased negative effect.
NOTE Confidence: 0.9986989
00:55:01.545 --> 00:55:02.765 So our hypothesis
NOTE Confidence: 0.877641
00:55:03.305 --> 00:55:04.765 is that, perhaps,
NOTE Confidence: 0.9997413

00:55:05.385 --> 00:55:05.885 TMS
NOTE Confidence: 0.9932698

00:55:06.560 --> 00:55:08.260 can be used to rescue
NOTE Confidence: 0.9932698

00:55:08.480 --> 00:55:09.700 those, responses
NOTE Confidence: 0.9950887

00:55:10.080 --> 00:55:10.980 by increasing,
NOTE Confidence: 0.84994066

00:55:11.760 --> 00:55:12.260 frontostriatal
NOTE Confidence: 0.99760485

00:55:12.640 --> 00:55:13.140 connectivity,
NOTE Confidence: 0.9820482

00:55:13.680 --> 00:55:16.260 decreasing motor activity, and decreasing
NOTE Confidence: 0.9820482

00:55:16.320 --> 00:55:18.260 their negative effect to normalize
NOTE Confidence: 0.99794084

00:55:18.800 --> 00:55:20.180 the frustration responses.
NOTE Confidence: 0.98645735

00:55:22.985 --> 00:55:24.025 And so this is our
NOTE Confidence: 0.98645735

00:55:24.025 --> 00:55:24.925 study design,
NOTE Confidence: 0.9878027

00:55:25.465 --> 00:55:26.985 and I'm gonna quickly skip
NOTE Confidence: 0.9878027

00:55:26.985 --> 00:55:29.465 this skip through the this
NOTE Confidence: 0.9878027

00:55:29.465 --> 00:55:30.844 in the interest of time.
NOTE Confidence: 0.9825494

00:55:31.385 --> 00:55:31.885 But,
NOTE Confidence: 0.9759329

00:55:32.585 --> 00:55:34.105 so very quickly is that

NOTE Confidence: 0.9759329
00:55:34.105 --> 00:55:34.585 they,
NOTE Confidence: 0.9979652
00:55:34.940 --> 00:55:36.300 have to complete a baseline
NOTE Confidence: 0.9979652
00:55:36.300 --> 00:55:37.980 assessment before coming to the
NOTE Confidence: 0.9979652
00:55:37.980 --> 00:55:38.480 lab
NOTE Confidence: 0.92770046
00:55:38.860 --> 00:55:41.420 for two TMS day. And
NOTE Confidence: 0.92770046
00:55:41.420 --> 00:55:43.340 before TMS, they complete the
NOTE Confidence: 0.92770046
00:55:43.340 --> 00:55:45.360 frustration paradigm during fMRI,
NOTE Confidence: 0.93904656
00:55:46.060 --> 00:55:46.740 and then,
NOTE Confidence: 0.89370626
00:55:47.180 --> 00:55:47.580 have,
NOTE Confidence: 0.8381665
00:55:47.980 --> 00:55:49.600 TMS receive TMS,
NOTE Confidence: 0.9961343
00:55:50.214 --> 00:55:51.655 and then complete the same
NOTE Confidence: 0.9961343
00:55:51.655 --> 00:55:53.194 frustration paradigms again.
NOTE Confidence: 0.96658266
00:55:53.655 --> 00:55:54.855 And on day one and
NOTE Confidence: 0.96658266
00:55:54.855 --> 00:55:55.675 day two,
NOTE Confidence: 0.94214344
00:55:56.535 --> 00:55:58.315 either they receive active,
NOTE Confidence: 0.98373044

00:55:58.934 --> 00:56:00.875 TMS on the first day
NOTE Confidence: 0.98373044

00:56:00.934 --> 00:56:01.734 and then,
NOTE Confidence: 0.983864

00:56:02.055 --> 00:56:03.575 sham TMS on the second
NOTE Confidence: 0.983864

00:56:03.575 --> 00:56:05.230 day or vice versa. So
NOTE Confidence: 0.983864

00:56:05.230 --> 00:56:05.969 it's counterbalanced
NOTE Confidence: 0.9537202

00:56:06.590 --> 00:56:07.070 within,
NOTE Confidence: 0.9844954

00:56:07.469 --> 00:56:07.969 subjects.
NOTE Confidence: 0.98984677

00:56:08.510 --> 00:56:10.190 And so far, our target
NOTE Confidence: 0.98984677

00:56:10.190 --> 00:56:11.010 is twenty,
NOTE Confidence: 0.9302858

00:56:11.630 --> 00:56:12.850 participants, and
NOTE Confidence: 0.9778878

00:56:13.150 --> 00:56:14.130 we have had,
NOTE Confidence: 0.88798285

00:56:14.510 --> 00:56:15.489 nineteen participants.
NOTE Confidence: 0.9592089

00:56:15.870 --> 00:56:17.310 And we have one last
NOTE Confidence: 0.9592089

00:56:17.310 --> 00:56:17.810 participant
NOTE Confidence: 0.9949035

00:56:18.110 --> 00:56:19.390 scheduled to come in for
NOTE Confidence: 0.9949035

00:56:19.390 --> 00:56:20.210 day two

NOTE Confidence: 0.9636212

00:56:21.015 --> 00:56:22.454 in two weeks. So we

NOTE Confidence: 0.9636212

00:56:22.454 --> 00:56:24.214 will be soon, finished with

NOTE Confidence: 0.9636212

00:56:24.214 --> 00:56:25.734 a study, which is ahead

NOTE Confidence: 0.9636212

00:56:25.734 --> 00:56:27.815 of schedule. Unheard of. Yeah.

NOTE Confidence: 0.9636212

00:56:27.815 --> 00:56:29.434 But we're happy about it.

NOTE Confidence: 0.9636212

00:56:29.655 --> 00:56:30.155 Yeah.

NOTE Confidence: 0.97337115

00:56:30.535 --> 00:56:31.035 And,

NOTE Confidence: 0.97391623

00:56:31.815 --> 00:56:34.230 another happy news is that

NOTE Confidence: 0.97391623

00:56:34.290 --> 00:56:35.489 the fact that we can

NOTE Confidence: 0.97391623

00:56:35.489 --> 00:56:35.989 frustrate,

NOTE Confidence: 0.9163768

00:56:37.090 --> 00:56:37.590 adults

NOTE Confidence: 0.99720585

00:56:37.890 --> 00:56:38.630 four times

NOTE Confidence: 0.9513076

00:56:39.170 --> 00:56:41.190 using the same frustration paradigm

NOTE Confidence: 0.9513076

00:56:41.330 --> 00:56:42.950 and they keep coming back

NOTE Confidence: 0.9628551

00:56:43.330 --> 00:56:45.170 is good news. Yeah. So

NOTE Confidence: 0.9628551

00:56:45.170 --> 00:56:46.630 this means that we can
NOTE Confidence: 0.9628551

00:56:46.775 --> 00:56:48.375 try to pursue this work
NOTE Confidence: 0.9628551

00:56:48.375 --> 00:56:50.215 in a larger sample. And,
NOTE Confidence: 0.9628551

00:56:50.215 --> 00:56:51.735 indeed, that's what we're doing
NOTE Confidence: 0.9628551

00:56:51.735 --> 00:56:53.094 with a pending r o
NOTE Confidence: 0.9628551

00:56:53.094 --> 00:56:53.594 one
NOTE Confidence: 0.91688186

00:56:53.895 --> 00:56:54.875 that was reviewed
NOTE Confidence: 0.995866

00:56:55.175 --> 00:56:56.475 last week. Unfortunately,
NOTE Confidence: 0.9856012

00:56:56.855 --> 00:56:58.375 it was not discussed, but
NOTE Confidence: 0.9856012

00:56:58.375 --> 00:57:00.135 we're going to persist and
NOTE Confidence: 0.9856012

00:57:00.135 --> 00:57:00.635 resubmit.
NOTE Confidence: 0.99036276

00:57:02.270 --> 00:57:03.869 Okay. So some of the
NOTE Confidence: 0.99036276

00:57:03.869 --> 00:57:05.650 preliminary finding here
NOTE Confidence: 0.9910551

00:57:06.109 --> 00:57:06.930 is that,
NOTE Confidence: 0.97479075

00:57:07.550 --> 00:57:08.690 we we indeed
NOTE Confidence: 0.961449

00:57:09.230 --> 00:57:10.910 found that we are able

NOTE Confidence: 0.961449
00:57:10.910 --> 00:57:12.670 to use TMS to increase
NOTE Confidence: 0.961449
00:57:12.670 --> 00:57:14.369 frontal striatal connectivity
NOTE Confidence: 0.9310622
00:57:15.444 --> 00:57:16.404 and only,
NOTE Confidence: 0.9995144
00:57:16.885 --> 00:57:17.704 in the active
NOTE Confidence: 0.89495426
00:57:18.085 --> 00:57:19.605 condition, but not in the
NOTE Confidence: 0.89495426
00:57:19.605 --> 00:57:20.005 sham,
NOTE Confidence: 0.9856593
00:57:20.405 --> 00:57:20.905 TMS.
NOTE Confidence: 0.9673848
00:57:21.525 --> 00:57:23.385 And we are able to,
NOTE Confidence: 0.99865484
00:57:23.924 --> 00:57:25.305 decrease motor activities
NOTE Confidence: 0.9696275
00:57:25.845 --> 00:57:27.464 only in the active condition,
NOTE Confidence: 0.9696275
00:57:27.525 --> 00:57:28.744 but not in sham.
NOTE Confidence: 0.9992746
00:57:29.480 --> 00:57:30.299 And we found some
NOTE Confidence: 0.99969685
00:57:30.599 --> 00:57:31.579 partial evidence
NOTE Confidence: 0.9574246
00:57:32.119 --> 00:57:34.299 that we could decrease negative
NOTE Confidence: 0.9574246
00:57:34.440 --> 00:57:36.039 effect and to a greater
NOTE Confidence: 0.9574246

00:57:36.039 --> 00:57:37.960 degree compared to the sham,
NOTE Confidence: 0.9574246

00:57:37.960 --> 00:57:39.579 inactive compared to sham.
NOTE Confidence: 0.8791246

00:57:39.960 --> 00:57:41.900 But this difference is not
NOTE Confidence: 0.8791246

00:57:41.960 --> 00:57:42.460 significant,
NOTE Confidence: 0.9985337

00:57:42.839 --> 00:57:43.339 perhaps
NOTE Confidence: 0.9452511

00:57:44.184 --> 00:57:46.045 due to small symbol size
NOTE Confidence: 0.9452511

00:57:46.265 --> 00:57:47.704 or the problem with self
NOTE Confidence: 0.9452511

00:57:47.704 --> 00:57:48.825 report. We all know the
NOTE Confidence: 0.9452511

00:57:48.825 --> 00:57:50.664 limitations of self re self
NOTE Confidence: 0.9452511

00:57:50.664 --> 00:57:51.164 report.
NOTE Confidence: 0.9976502

00:57:51.865 --> 00:57:52.365 Yeah.
NOTE Confidence: 0.9445222

00:57:52.904 --> 00:57:54.184 So we are pleased to
NOTE Confidence: 0.9445222

00:57:54.184 --> 00:57:55.964 found evidence to support
NOTE Confidence: 0.91171503

00:57:56.505 --> 00:57:57.704 pretty much all of our
NOTE Confidence: 0.91171503

00:57:57.704 --> 00:57:58.204 hypothesis
NOTE Confidence: 0.97825176

00:57:58.610 --> 00:58:00.550 except for the self report,

NOTE Confidence: 0.97825176
00:58:00.690 --> 00:58:02.450 and this is probably one
NOTE Confidence: 0.97825176
00:58:02.450 --> 00:58:03.570 of the the most clean
NOTE Confidence: 0.97825176
00:58:03.570 --> 00:58:04.850 data that I've seen in
NOTE Confidence: 0.97825176
00:58:04.850 --> 00:58:07.090 my whole research career. So
NOTE Confidence: 0.97825176
00:58:07.090 --> 00:58:08.690 we were initially, we were
NOTE Confidence: 0.97825176
00:58:08.690 --> 00:58:10.610 shocked, but, hopefully, this is
NOTE Confidence: 0.97825176
00:58:10.610 --> 00:58:12.210 not just a fluke once
NOTE Confidence: 0.97825176
00:58:12.210 --> 00:58:14.230 we expand our sample size.
NOTE Confidence: 0.96525466
00:58:14.664 --> 00:58:15.164 Yeah.
NOTE Confidence: 0.9431579
00:58:16.825 --> 00:58:17.325 Okay.
NOTE Confidence: 0.9870359
00:58:18.265 --> 00:58:19.704 So I'll wrap up my
NOTE Confidence: 0.9870359
00:58:19.704 --> 00:58:20.984 talk there in the interest
NOTE Confidence: 0.9870359
00:58:20.984 --> 00:58:22.204 of time, but,
NOTE Confidence: 0.9244637
00:58:22.664 --> 00:58:24.184 I cannot end my talk
NOTE Confidence: 0.9244637
00:58:24.184 --> 00:58:25.404 without thanking
NOTE Confidence: 0.9694353

00:58:25.785 --> 00:58:26.765 thanking my fabulous
NOTE Confidence: 0.99121886

00:58:27.065 --> 00:58:28.744 lab that has done an
NOTE Confidence: 0.99121886

00:58:28.744 --> 00:58:29.964 amazing job.
NOTE Confidence: 0.9572999

00:58:30.660 --> 00:58:32.420 They are why I was
NOTE Confidence: 0.9572999

00:58:32.420 --> 00:58:33.700 able to present all the
NOTE Confidence: 0.9572999

00:58:33.859 --> 00:58:35.300 all of the work, that
NOTE Confidence: 0.9572999

00:58:35.300 --> 00:58:36.280 I did today.
NOTE Confidence: 0.9891433

00:58:36.819 --> 00:58:38.359 So and this include
NOTE Confidence: 0.97685754

00:58:38.660 --> 00:58:40.339 and special shout out to
NOTE Confidence: 0.97685754

00:58:40.339 --> 00:58:42.200 Alexa, who's my lab manager
NOTE Confidence: 0.9954548

00:58:42.515 --> 00:58:43.555 and who has done a
NOTE Confidence: 0.9954548

00:58:43.555 --> 00:58:45.735 tremendous job on recruiting participants
NOTE Confidence: 0.9954548

00:58:45.955 --> 00:58:46.935 and taking participants
NOTE Confidence: 0.9816841

00:58:47.635 --> 00:58:49.795 through the study procedures and,
NOTE Confidence: 0.9891816

00:58:50.195 --> 00:58:51.715 many students sitting in the
NOTE Confidence: 0.9891816

00:58:51.715 --> 00:58:52.215 audience.

NOTE Confidence: 0.796384
00:58:53.235 --> 00:58:55.185 Right? And then a fabulous
NOTE Confidence: 0.8819933
00:58:55.550 --> 00:58:56.050 collaborators,
NOTE Confidence: 0.952219
00:58:56.910 --> 00:58:58.530 and it has been fun
NOTE Confidence: 0.952219
00:58:58.670 --> 00:58:59.630 on doing all of the
NOTE Confidence: 0.952219
00:58:59.630 --> 00:59:01.010 work, with you guys.
NOTE Confidence: 0.9910854
00:59:01.390 --> 00:59:01.890 Yeah.
NOTE Confidence: 0.7241799
00:59:04.430 --> 00:59:04.930 Good.
NOTE Confidence: 0.96772015
00:59:08.184 --> 00:59:09.785 And final thing, we are
NOTE Confidence: 0.96772015
00:59:09.785 --> 00:59:12.025 still actively recruiting. So if
NOTE Confidence: 0.96772015
00:59:12.025 --> 00:59:13.704 you know somebody, please reach
NOTE Confidence: 0.96772015
00:59:13.704 --> 00:59:14.204 out.
NOTE Confidence: 0.9018128
00:59:15.065 --> 00:59:15.865 Oh, one thing that was
NOTE Confidence: 0.9018128
00:59:15.865 --> 00:59:17.224 amazing. I think the win
NOTE Confidence: 0.9018128
00:59:17.224 --> 00:59:18.924 the award for most innovative
NOTE Confidence: 0.9937195
00:59:19.224 --> 00:59:20.825 incentive for participants. I think
NOTE Confidence: 0.9937195

00:59:20.825 --> 00:59:21.944 a three d printed brain
NOTE Confidence: 0.9937195

00:59:21.944 --> 00:59:22.920 is something I would
NOTE Confidence: 0.95734924

00:59:23.480 --> 00:59:24.920 oh, there we go. Oh,
NOTE Confidence: 0.95734924

00:59:24.920 --> 00:59:25.819 thank you.
NOTE Confidence: 0.845673

00:59:27.000 --> 00:59:28.279 And we can pick,
NOTE Confidence: 0.97410923

00:59:28.760 --> 00:59:30.119 print in the color of
NOTE Confidence: 0.97410923

00:59:30.119 --> 00:59:30.859 your choice.
NOTE Confidence: 0.8517126

00:59:32.680 --> 00:59:34.119 And So you know. Questions
NOTE Confidence: 0.8517126

00:59:34.119 --> 00:59:35.099 for for Wanling?
NOTE Confidence: 0.9983551

00:59:35.835 --> 00:59:36.335 Could
NOTE Confidence: 0.99608773

00:59:41.755 --> 00:59:42.734 could you just
NOTE Confidence: 0.9996026

00:59:43.035 --> 00:59:43.535 describe
NOTE Confidence: 0.9019462

00:59:44.075 --> 00:59:44.575 what,
NOTE Confidence: 0.8857358

00:59:45.835 --> 00:59:47.755 is TMS a voltage? What
NOTE Confidence: 0.8857358

00:59:47.755 --> 00:59:49.349 is of of the voltage
NOTE Confidence: 0.8857358

00:59:49.349 --> 00:59:50.710 you use? Yeah. Yeah. Yeah.

NOTE Confidence: 0.8857358
00:59:50.710 --> 00:59:52.309 Yeah. I I don't know.
NOTE Confidence: 0.8857358
00:59:52.309 --> 00:59:53.930 It stands for transcranial
NOTE Confidence: 0.9992022
00:59:54.309 --> 00:59:54.809 magnetic
NOTE Confidence: 0.93983054
00:59:55.190 --> 00:59:57.529 stimulation. It's basically sending,
NOTE Confidence: 0.9770587
00:59:58.150 --> 00:59:58.890 it's noninvasive.
NOTE Confidence: 0.9330971
00:59:59.349 --> 01:00:00.869 It's just a coil on
NOTE Confidence: 0.9330971
01:00:00.869 --> 01:00:02.525 the head or depending on
NOTE Confidence: 0.9330971
01:00:02.525 --> 01:00:04.065 which region that you target.
NOTE Confidence: 0.9786372
01:00:04.365 --> 01:00:05.425 It sends electrical,
NOTE Confidence: 0.906003
01:00:06.365 --> 01:00:08.305 pulses and to try to,
NOTE Confidence: 0.7735212
01:00:08.765 --> 01:00:10.945 modulate the, neuro activities
NOTE Confidence: 0.9973665
01:00:11.245 --> 01:00:12.785 inside the skull. Yeah.
NOTE Confidence: 0.9279454
01:00:13.085 --> 01:00:14.365 I'm not an expert on
NOTE Confidence: 0.9279454
01:00:14.365 --> 01:00:16.790 TMS, and doctor Bon, still
NOTE Confidence: 0.9279454
01:00:16.790 --> 01:00:17.690 is. So,
NOTE Confidence: 0.98205143

01:00:17.990 --> 01:00:19.110 yeah, I'm sure he will
NOTE Confidence: 0.98205143

01:00:19.110 --> 01:00:20.550 be happy to answer any
NOTE Confidence: 0.98205143

01:00:20.550 --> 01:00:21.750 of your questions. So reach
NOTE Confidence: 0.98205143

01:00:21.750 --> 01:00:22.570 out to him.
NOTE Confidence: 0.9968861

01:00:23.190 --> 01:00:24.090 He's in psychiatry.
NOTE Confidence: 0.9960015

01:00:24.550 --> 01:00:25.050 Yeah.
NOTE Confidence: 0.875466

01:00:25.590 --> 01:00:26.090 Great.
NOTE Confidence: 0.9667751

01:00:27.030 --> 01:00:28.150 If I may, just really
NOTE Confidence: 0.9667751

01:00:28.150 --> 01:00:29.845 quickly, I was, so it's
NOTE Confidence: 0.9667751

01:00:29.845 --> 01:00:30.805 interesting when you look at
NOTE Confidence: 0.9667751

01:00:30.805 --> 01:00:31.845 the mouse work that you
NOTE Confidence: 0.9667751

01:00:31.845 --> 01:00:33.705 see the increased locomotor activity
NOTE Confidence: 0.9732446

01:00:34.005 --> 01:00:35.385 in response to frustration.
NOTE Confidence: 0.99199593

01:00:35.925 --> 01:00:37.685 And I'm just wondering to
NOTE Confidence: 0.99199593

01:00:37.685 --> 01:00:38.885 what extent is that an
NOTE Confidence: 0.99199593

01:00:38.885 --> 01:00:40.745 adaptive response to the frustration

NOTE Confidence: 0.95702595

01:00:41.125 --> 01:00:42.480 that helps with coping. So

NOTE Confidence: 0.95702595

01:00:42.560 --> 01:00:44.020 I'm thinking about Robert Sapolsky's

NOTE Confidence: 0.95702595

01:00:44.160 --> 01:00:45.920 book, why zebras don't get

NOTE Confidence: 0.95702595

01:00:45.920 --> 01:00:47.359 ulcers, and the idea of

NOTE Confidence: 0.95702595

01:00:47.359 --> 01:00:48.880 that stress response and then

NOTE Confidence: 0.95702595

01:00:48.880 --> 01:00:50.480 kind of movement or response

NOTE Confidence: 0.95702595

01:00:50.480 --> 01:00:51.760 to that stress, kind of

NOTE Confidence: 0.95702595

01:00:51.760 --> 01:00:53.460 alleviating that stress. So

NOTE Confidence: 0.9709801

01:00:53.760 --> 01:00:55.440 if you then translate to

NOTE Confidence: 0.9709801

01:00:55.440 --> 01:00:56.340 the human condition,

NOTE Confidence: 0.99853593

01:00:56.645 --> 01:00:58.244 you've got the grip strength

NOTE Confidence: 0.99853593

01:00:58.244 --> 01:01:00.165 condition. If you block someone

NOTE Confidence: 0.99853593

01:01:00.165 --> 01:01:00.825 from using

NOTE Confidence: 0.9991678

01:01:01.125 --> 01:01:01.944 that device,

NOTE Confidence: 0.9910321

01:01:02.325 --> 01:01:03.444 does that actually take longer

NOTE Confidence: 0.9910321

01:01:03.444 --> 01:01:04.185 for the frustration
NOTE Confidence: 0.938409

01:01:04.724 --> 01:01:06.744 to subside and that reactivity
NOTE Confidence: 0.99028116

01:01:07.204 --> 01:01:08.025 to be reestablished?
NOTE Confidence: 0.99857575

01:01:08.724 --> 01:01:10.165 Mhmm. That is a very
NOTE Confidence: 0.99857575

01:01:10.165 --> 01:01:10.905 good question
NOTE Confidence: 0.99260706

01:01:11.310 --> 01:01:11.710 and,
NOTE Confidence: 0.97977316

01:01:12.110 --> 01:01:13.810 something that we are grappling
NOTE Confidence: 0.97977316

01:01:13.950 --> 01:01:16.050 with as well. So indeed,
NOTE Confidence: 0.99592227

01:01:16.590 --> 01:01:17.890 in animal research,
NOTE Confidence: 0.99002475

01:01:18.190 --> 01:01:19.490 increased motor activities
NOTE Confidence: 0.93304366

01:01:20.030 --> 01:01:21.570 have been shown to
NOTE Confidence: 0.9993663

01:01:21.870 --> 01:01:22.850 be an adaptive
NOTE Confidence: 0.9997116

01:01:23.390 --> 01:01:23.890 strategy
NOTE Confidence: 0.8621752

01:01:24.590 --> 01:01:25.250 in that
NOTE Confidence: 0.9951353

01:01:26.234 --> 01:01:28.174 if what, they were doing
NOTE Confidence: 0.9951353

01:01:28.234 --> 01:01:29.775 no longer leads to reward,

NOTE Confidence: 0.94421744
01:01:30.234 --> 01:01:31.775 then they have to scramble
NOTE Confidence: 0.94421744
01:01:31.835 --> 01:01:33.355 or change a strategy in
NOTE Confidence: 0.94421744
01:01:33.355 --> 01:01:34.954 order to sort of forging
NOTE Confidence: 0.94421744
01:01:34.954 --> 01:01:35.454 strategy
NOTE Confidence: 0.95942014
01:01:35.835 --> 01:01:37.454 and in order to obtain
NOTE Confidence: 0.95942014
01:01:37.595 --> 01:01:39.609 resources somewhere else. So it
NOTE Confidence: 0.95942014
01:01:39.609 --> 01:01:41.530 is an adaptive strategy in
NOTE Confidence: 0.95942014
01:01:41.530 --> 01:01:42.190 that sense.
NOTE Confidence: 0.9929595
01:01:42.570 --> 01:01:44.990 And, what we are but
NOTE Confidence: 0.9929595
01:01:45.130 --> 01:01:45.869 the degree
NOTE Confidence: 0.99956596
01:01:46.330 --> 01:01:47.230 of the
NOTE Confidence: 0.9973138
01:01:47.770 --> 01:01:50.030 motor activity that is sustained
NOTE Confidence: 0.8914474
01:01:50.410 --> 01:01:50.910 and,
NOTE Confidence: 0.9897411
01:01:51.530 --> 01:01:53.070 continue to be there
NOTE Confidence: 0.971419
01:01:53.555 --> 01:01:55.395 might be why that's, could
NOTE Confidence: 0.971419

01:01:55.395 --> 01:01:56.055 be maladaptive
NOTE Confidence: 0.9497101

01:01:56.435 --> 01:01:58.375 assigned for maladaptive responses.
NOTE Confidence: 0.9971634

01:01:59.075 --> 01:02:00.615 And in terms of blocking
NOTE Confidence: 0.9987608

01:02:00.995 --> 01:02:01.815 the devices
NOTE Confidence: 0.971139

01:02:02.435 --> 01:02:04.055 in order to obtain reward,
NOTE Confidence: 0.971139

01:02:04.115 --> 01:02:05.555 that has also been used
NOTE Confidence: 0.971139

01:02:05.555 --> 01:02:06.935 in some of the previous,
NOTE Confidence: 0.971139

01:02:07.155 --> 01:02:08.135 human research.
NOTE Confidence: 0.8663081

01:02:08.580 --> 01:02:09.940 And what they shown is
NOTE Confidence: 0.8663081

01:02:09.940 --> 01:02:12.200 that that also induced frustration,
NOTE Confidence: 0.9613892

01:02:12.660 --> 01:02:14.120 and it might actually,
NOTE Confidence: 0.9217749

01:02:15.860 --> 01:02:17.960 elicit higher levels of frustration
NOTE Confidence: 0.9217749

01:02:18.260 --> 01:02:18.760 because
NOTE Confidence: 0.9860686

01:02:19.140 --> 01:02:20.580 it sort of impede your
NOTE Confidence: 0.9860686

01:02:20.580 --> 01:02:21.800 sense of agency
NOTE Confidence: 0.944259

01:02:22.655 --> 01:02:23.535 when you are,

NOTE Confidence: 0.94273007
01:02:24.655 --> 01:02:26.494 doing something right, and then
NOTE Confidence: 0.94273007
01:02:26.494 --> 01:02:27.795 it's out of your control,
NOTE Confidence: 0.94273007
01:02:27.855 --> 01:02:28.974 and then you can seem
NOTE Confidence: 0.94273007
01:02:28.974 --> 01:02:30.734 to do anything about it
NOTE Confidence: 0.94273007
01:02:30.734 --> 01:02:32.015 and not being able to
NOTE Confidence: 0.94273007
01:02:32.015 --> 01:02:32.915 obtain reward.
NOTE Confidence: 0.89676416
01:02:33.295 --> 01:02:34.655 Yeah. So it's just some,
NOTE Confidence: 0.9565851
01:02:35.775 --> 01:02:37.295 sort of approach that other
NOTE Confidence: 0.9565851
01:02:37.295 --> 01:02:38.849 labs has take to induce
NOTE Confidence: 0.9565851
01:02:38.849 --> 01:02:39.349 prostration.
NOTE Confidence: 0.9541137
01:02:39.650 --> 01:02:41.730 But yeah. Well, now we're
NOTE Confidence: 0.9541137
01:02:41.730 --> 01:02:43.250 currently pursuing right now, but
NOTE Confidence: 0.9541137
01:02:43.250 --> 01:02:43.750 interesting.
NOTE Confidence: 0.87411356
01:02:45.089 --> 01:02:46.470 Okay. Pam, real quick.
NOTE Confidence: 0.77797455
01:02:47.890 --> 01:02:48.609 K. There we go. Of
NOTE Confidence: 0.77797455

01:02:48.609 --> 01:02:49.109 course.

NOTE Confidence: 0.9954446

01:02:50.775 --> 01:02:52.535 I'm I'm really curious about

NOTE Confidence: 0.9954446

01:02:52.535 --> 01:02:54.395 the, the question of

NOTE Confidence: 0.99592286

01:02:55.015 --> 01:02:55.515 attenuation.

NOTE Confidence: 0.9692641

01:02:55.895 --> 01:02:56.615 You know, I know that

NOTE Confidence: 0.9692641

01:02:56.615 --> 01:02:57.974 you were surprised at that

NOTE Confidence: 0.9692641

01:02:57.974 --> 01:02:59.515 you can bother and frustrate.

NOTE Confidence: 0.9692641

01:02:59.655 --> 01:03:01.575 Sorry. Not bother. Frustrate someone

NOTE Confidence: 0.9692641

01:03:01.575 --> 01:03:02.694 over and over again, and

NOTE Confidence: 0.9692641

01:03:02.694 --> 01:03:04.180 it still works. I do

NOTE Confidence: 0.9692641

01:03:04.180 --> 01:03:05.220 wonder if there's going to

NOTE Confidence: 0.9692641

01:03:05.220 --> 01:03:06.260 be some sort of signal

NOTE Confidence: 0.9692641

01:03:06.260 --> 01:03:07.940 loss or attenuation at the

NOTE Confidence: 0.9692641

01:03:07.940 --> 01:03:09.700 fourth or fifth time, especially

NOTE Confidence: 0.9692641

01:03:09.700 --> 01:03:10.660 because they know it's gonna

NOTE Confidence: 0.9692641

01:03:10.660 --> 01:03:12.020 get better. I don't know

NOTE Confidence: 0.9692641
01:03:12.020 --> 01:03:13.060 how you'd be able to,
NOTE Confidence: 0.9692641
01:03:13.060 --> 01:03:14.180 you know, gauge for that
NOTE Confidence: 0.9692641
01:03:14.180 --> 01:03:15.700 or study that or call
NOTE Confidence: 0.9692641
01:03:15.700 --> 01:03:17.140 it learning as opposed to
NOTE Confidence: 0.9692641
01:03:17.140 --> 01:03:18.340 an I'm I'm wondering how
NOTE Confidence: 0.9692641
01:03:18.340 --> 01:03:20.095 you're gonna handle that. Yeah.
NOTE Confidence: 0.9692641
01:03:20.095 --> 01:03:21.535 Yeah. Definitely. We do see
NOTE Confidence: 0.9692641
01:03:21.535 --> 01:03:22.355 some attenuation.
NOTE Confidence: 0.7940319
01:03:22.815 --> 01:03:24.415 So the second time when
NOTE Confidence: 0.7940319
01:03:24.415 --> 01:03:25.855 they perform the same structure
NOTE Confidence: 0.7940319
01:03:25.855 --> 01:03:26.515 in paradigm,
NOTE Confidence: 0.7300805
01:03:26.975 --> 01:03:28.735 they don't break themselves with
NOTE Confidence: 0.7300805
01:03:28.735 --> 01:03:30.735 scale as structured compared to
NOTE Confidence: 0.7300805
01:03:30.735 --> 01:03:31.715 the first time.
NOTE Confidence: 0.96035606
01:03:32.015 --> 01:03:32.915 Yeah. But,
NOTE Confidence: 0.7667303

01:03:33.800 --> 01:03:35.320 everybody dropped. Right? But the

NOTE Confidence: 0.7667303

01:03:35.320 --> 01:03:36.680 decrease of whether they,

NOTE Confidence: 0.772345

01:03:37.160 --> 01:03:38.780 how how much they dropped,

NOTE Confidence: 0.772345

01:03:38.920 --> 01:03:40.619 I could vary by individual.

NOTE Confidence: 0.86748856

01:03:41.000 --> 01:03:42.540 And we are hoping that,

NOTE Confidence: 0.78289396

01:03:43.160 --> 01:03:44.680 the degree of drop will

NOTE Confidence: 0.78289396

01:03:44.680 --> 01:03:46.440 be less in those who

NOTE Confidence: 0.78289396

01:03:46.440 --> 01:03:47.720 are elevated who has elevated

NOTE Confidence: 0.78289396

01:03:47.720 --> 01:03:48.220 the

NOTE Confidence: 0.17073244

01:03:48.600 --> 01:03:48.765 immune

NOTE Confidence: 0.9063458

01:03:55.005 --> 01:03:56.525 Wonderful. Just in the interest

NOTE Confidence: 0.9063458

01:03:56.525 --> 01:03:57.724 of time, maybe we'll wrap

NOTE Confidence: 0.9063458

01:03:57.724 --> 01:03:58.605 it up there, but please

NOTE Confidence: 0.9063458

01:03:58.605 --> 01:03:59.565 join me in thanking while

NOTE Confidence: 0.9063458

01:03:59.565 --> 01:04:00.444 I'm saying for a great

NOTE Confidence: 0.9063458

01:04:00.444 --> 01:04:01.184 friend, Rams.