WEBVTT

NOTE duration: ”01:01:37.520”

NOTE Confidence: 0.9952086

00:00:00.160 --> 00:00:01.860 My lab as a PGA,

NOTE Confidence: 0.99912995

00:00:03.040 --> 00:00:04.260 in twenty fourteen.

NOTE Confidence: 0.9995575

00:00:05.359 --> 00:00:06.580 Since that time,

NOTE Confidence: 0.96840817

00:00:07.279 --> 00:00:09.119 Kareem completed his doctorate in

NOTE Confidence: 0.96840817

00:00:09.119 --> 00:00:09.619 psychology

NOTE Confidence: 0.94962126

00:00:09.920 --> 00:00:11.860 and a t thirty two

NOTE Confidence: 0.94962126

00:00:12.000 --> 00:00:14.179 post doctoral training in translational

NOTE Confidence: 0.94962126

00:00:14.400 --> 00:00:14.900 neuroscience.

NOTE Confidence: 0.98413277

00:00:16.725 --> 00:00:18.485 He is a recipient of

NOTE Confidence: 0.98413277

00:00:18.485 --> 00:00:20.025 the Clinical and Translational

NOTE Confidence: 0.87840873

00:00:20.325 --> 00:00:21.145 Science Award

NOTE Confidence: 0.8945858

00:00:21.525 --> 00:00:22.505 and a K23

NOTE Confidence: 0.9748324

00:00:23.285 --> 00:00:25.785 Career Development Award from NIMH.

NOTE Confidence: 0.98618466

00:00:26.805 --> 00:00:28.965 In twenty twenty two, he

NOTE Confidence: 0.98618466

00:00:28.965 --> 00:00:30.505 received a Rising

NOTE Confidence: 0.9969123

00:00:31.070 --> 00:00:31.650 star award

NOTE Confidence: 0.9562712

00:00:32.350 --> 00:00:33.970 from the Society of Biological

NOTE Confidence: 0.9562712

00:00:34.270 --> 00:00:34.770 Psychiatry.

NOTE Confidence: 0.950232

00:00:36.510 --> 00:00:37.470 So what are the secret

NOTE Confidence: 0.950232

00:00:37.470 --> 00:00:38.370 of his success?

NOTE Confidence: 0.96024513

00:00:39.309 --> 00:00:40.850 Kareem, can I tell them?

NOTE Confidence: 0.96787226

00:00:43.805 --> 00:00:44.925 You have to learn the

NOTE Confidence: 0.96787226

00:00:44.925 --> 00:00:47.585 most technical method of fMRI

NOTE Confidence: 0.96787226

00:00:47.805 --> 00:00:49.644 data analysis and apply it

NOTE Confidence: 0.96787226

00:00:49.644 --> 00:00:51.245 to the largest dataset in

NOTE Confidence: 0.96787226

00:00:51.245 --> 00:00:51.905 the world

NOTE Confidence: 0.98050225

00:00:52.604 --> 00:00:54.704 to test mechanistic hypothesis

NOTE Confidence: 0.998644

00:00:55.085 --> 00:00:55.905 about transdiagnostic

NOTE Confidence: 0.99586034

00:00:56.445 --> 00:00:57.664 developmental psychopathology.

NOTE Confidence: 0.95482934

00:00:58.630 --> 00:00:59.830 So Karim will tell us

NOTE Confidence: 0.95482934

00:00:59.830 --> 00:01:00.730 what he learned.

NOTE Confidence: 0.9509313

00:01:07.510 --> 00:01:08.550 Hey. Thank you, Dennis, for

NOTE Confidence: 0.9509313

00:01:08.550 --> 00:01:10.310 those kind words and, generous

NOTE Confidence: 0.9509313

00:01:10.310 --> 00:01:10.810 introduction.

NOTE Confidence: 0.97032493

00:01:11.110 --> 00:01:11.610 It's,

NOTE Confidence: 0.98468953

00:01:11.990 --> 00:01:13.030 great to be here today

NOTE Confidence: 0.98468953

00:01:13.030 --> 00:01:14.505 and tell you about, my

NOTE Confidence: 0.98468953

00:01:14.505 --> 00:01:16.745 research program, which, as Dennis

NOTE Confidence: 0.98468953

00:01:16.745 --> 00:01:18.025 mentioned, is really focused on

NOTE Confidence: 0.98468953

00:01:18.025 --> 00:01:19.485 understanding emotion regulation

NOTE Confidence: 0.92507285

00:01:19.785 --> 00:01:21.645 impairments in child mental health,

NOTE Confidence: 0.9715685

00:01:22.105 --> 00:01:23.145 and what might go awry

NOTE Confidence: 0.9715685

00:01:23.145 --> 00:01:24.505 in these networks that play

NOTE Confidence: 0.9715685

00:01:24.505 --> 00:01:26.040 such a critical role in,

NOTE Confidence: 0.9920921

00:01:26.440 --> 00:01:27.959 the top down regulation of

NOTE Confidence: 0.9920921

00:01:27.959 --> 00:01:29.480 emotion to lead to increased

NOTE Confidence: 0.9920921

00:01:29.480 --> 00:01:30.380 risk for,

NOTE Confidence: 0.9706126

00:01:30.680 --> 00:01:31.720 child mental health,

NOTE Confidence: 0.95923007

00:01:32.120 --> 00:01:32.620 disorders.

NOTE Confidence: 0.98470527

00:01:34.520 --> 00:01:35.319 This is just,

NOTE Confidence: 0.8411685

00:01:35.959 --> 00:01:36.700 my disclosures,

NOTE Confidence: 0.9798252

00:01:37.800 --> 00:01:39.080 grants that are supporting some

NOTE Confidence: 0.9798252

00:01:39.080 --> 00:01:39.959 of the work I'll be

NOTE Confidence: 0.9798252

00:01:39.959 --> 00:01:41.020 discussing today.

NOTE Confidence: 0.9902218

00:01:42.334 --> 00:01:43.694 So in terms of the

NOTE Confidence: 0.9902218

00:01:43.694 --> 00:01:45.534 flow for today's talk, I'd

NOTE Confidence: 0.9902218

00:01:45.534 --> 00:01:46.334 like to start with an

NOTE Confidence: 0.9902218

00:01:46.334 --> 00:01:48.415 overview of what exactly motion

NOTE Confidence: 0.9902218

00:01:48.415 --> 00:01:49.455 regulation is,

NOTE Confidence: 0.95501447

00:01:49.854 --> 00:01:51.215 and focus on some of

NOTE Confidence: 0.95501447

00:01:51.215 --> 00:01:52.415 the work that's been really

NOTE Confidence: 0.95501447

00:01:52.415 --> 00:01:53.935 foundational for my lab's work

NOTE Confidence: 0.95501447

00:01:53.935 --> 00:01:54.360 and,

NOTE Confidence: 0.98274237

00:01:55.160 --> 00:01:56.940 really centering on one particular

NOTE Confidence: 0.98274237

00:01:57.000 --> 00:01:58.300 circuit that's been,

NOTE Confidence: 0.9467741

00:01:59.000 --> 00:02:01.080 consistently implicated in child mental

NOTE Confidence: 0.9467741

00:02:01.080 --> 00:02:02.760 health or this frontal limbic

NOTE Confidence: 0.9467741

00:02:02.760 --> 00:02:03.260 circuit.

NOTE Confidence: 0.9963478

00:02:04.280 --> 00:02:05.160 I'd I'd like to share

NOTE Confidence: 0.9963478

00:02:05.160 --> 00:02:06.520 with you some work regarding,

NOTE Confidence: 0.9963478

00:02:06.760 --> 00:02:07.260 MyLab's

NOTE Confidence: 0.9260168

00:02:08.865 --> 00:02:10.625 focus on understanding the functional

NOTE Confidence: 0.9260168

00:02:10.625 --> 00:02:11.125 connectome,

NOTE Confidence: 0.97863024

00:02:11.745 --> 00:02:12.625 and wrap up with some

NOTE Confidence: 0.97863024

00:02:12.625 --> 00:02:14.225 of our ongoing studies and,

NOTE Confidence: 0.97863024

00:02:14.465 --> 00:02:16.165 new work and also spotlighting

NOTE Confidence: 0.97863024

00:02:16.305 --> 00:02:18.405 some, potential areas for collaboration.

NOTE Confidence: 0.9644545

00:02:20.340 --> 00:02:21.220 So we're going to be

NOTE Confidence: 0.9644545

00:02:21.220 --> 00:02:22.260 talking about a lot of

NOTE Confidence: 0.9644545

00:02:22.260 --> 00:02:23.860 neuroscience today where my brain

NOTE Confidence: 0.9644545

00:02:23.860 --> 00:02:25.460 ties specifically for this as

NOTE Confidence: 0.9644545

00:02:25.460 --> 00:02:26.520 you can see. So,

NOTE Confidence: 0.99980104

00:02:26.900 --> 00:02:28.360 let's just jump right in.

NOTE Confidence: 0.99869186

00:02:29.139 --> 00:02:30.740 When we think about emotion

NOTE Confidence: 0.99869186

00:02:30.740 --> 00:02:31.240 regulation,

NOTE Confidence: 0.9759146

00:02:31.860 --> 00:02:32.680 there's actually,

NOTE Confidence: 0.99964464

00:02:33.220 --> 00:02:33.800 no consistent

NOTE Confidence: 0.9486103

00:02:34.405 --> 00:02:36.985 definition of emotion regulation, surprisingly.

NOTE Confidence: 0.99263704

00:02:38.165 --> 00:02:39.705 And if we think about,

NOTE Confidence: 0.9487813

00:02:40.085 --> 00:02:41.445 the work that my lab

NOTE Confidence: 0.9487813

00:02:41.445 --> 00:02:42.885 focuses on, it's really thinking

NOTE Confidence: 0.9487813

00:02:42.885 --> 00:02:44.725 about, emotion regulation as the

NOTE Confidence: 0.9487813

00:02:44.725 --> 00:02:46.505 top down control of emotion.

NOTE Confidence: 0.9487813

00:02:46.565 --> 00:02:49.610 So recruitment of, related cognitive

NOTE Confidence: 0.9487813

00:02:49.669 --> 00:02:50.650 control networks,

NOTE Confidence: 0.9886503

00:02:51.030 --> 00:02:52.970 to modulate emotion generativity.

NOTE Confidence: 0.99701995

00:02:54.550 --> 00:02:56.550 And, there's different ways of

NOTE Confidence: 0.99701995

00:02:56.550 --> 00:02:58.250 categorizing emotion regulation.

NOTE Confidence: 0.91978157

00:02:59.269 --> 00:02:59.750 One,

NOTE Confidence: 0.9667642

00:03:00.230 --> 00:03:02.250 way of understanding emotion regulation

NOTE Confidence: 0.9667642

00:03:02.310 --> 00:03:02.715 is,

NOTE Confidence: 0.9829398

00:03:03.114 --> 00:03:04.894 thinking about adaptive strategies.

NOTE Confidence: 0.9552546

00:03:05.834 --> 00:03:06.875 And here we might think

NOTE Confidence: 0.9552546

00:03:06.875 --> 00:03:08.254 about cognitive reappraisal,

NOTE Confidence: 0.92068243

00:03:09.114 --> 00:03:10.315 problem solving, and,

NOTE Confidence: 0.94021654

00:03:10.715 --> 00:03:11.694 yoga and other,

NOTE Confidence: 0.9313688

00:03:13.915 --> 00:03:16.020 strategies. So cognitive reappraisal is,

NOTE Confidence: 0.9559091

00:03:16.580 --> 00:03:17.700 one approach that we will

NOTE Confidence: 0.9559091

00:03:17.700 --> 00:03:19.639 be focusing on today, especially.

NOTE Confidence: 0.95031804

00:03:20.500 --> 00:03:21.800 Another way of,

NOTE Confidence: 0.97487706

00:03:22.900 --> 00:03:24.100 thinking about this is if

NOTE Confidence: 0.97487706

00:03:24.100 --> 00:03:24.919 there's maladaptive,

NOTE Confidence: 0.9867754

00:03:25.380 --> 00:03:27.480 there's also maladaptive ways of,

NOTE Confidence: 0.9989559

00:03:28.180 --> 00:03:29.935 that can be conceptualized with

NOTE Confidence: 0.9989559

00:03:29.935 --> 00:03:30.835 emotion regulation.

NOTE Confidence: 0.97420275

00:03:31.215 --> 00:03:32.735 So two common strategies that

NOTE Confidence: 0.97420275

00:03:32.735 --> 00:03:33.794 fall under this,

NOTE Confidence: 0.99036884

00:03:34.335 --> 00:03:36.195 construct are suppression and rumination.

NOTE Confidence: 0.77628887

00:03:37.135 --> 00:03:37.955 And interesting,

NOTE Confidence: 0.97021556

00:03:38.895 --> 00:03:40.415 actually, suppression could be considered

NOTE Confidence: 0.97021556

00:03:40.415 --> 00:03:42.110 a maladaptive or an adaptive

NOTE Confidence: 0.97021556

00:03:42.110 --> 00:03:43.730 response in terms of inhibiting,

NOTE Confidence: 0.94206035

00:03:44.030 --> 00:03:44.930 one's emotional,

NOTE Confidence: 0.85477555

00:03:45.790 --> 00:03:46.610 ex expression.

NOTE Confidence: 0.946559

00:03:48.910 --> 00:03:50.270 The for me, the most

NOTE Confidence: 0.946559

00:03:50.270 --> 00:03:52.209 interesting thing about emotion regulation

NOTE Confidence: 0.946559

00:03:52.430 --> 00:03:52.930 is,

NOTE Confidence: 0.99963963

00:03:53.885 --> 00:03:55.745 how this construct is really

NOTE Confidence: 0.99963963

00:03:55.805 --> 00:03:56.465 a commonality

NOTE Confidence: 0.9992051

00:03:56.765 --> 00:03:58.444 across several child mental health

NOTE Confidence: 0.9992051

00:03:58.444 --> 00:03:58.944 conditions.

NOTE Confidence: 0.9904818

00:03:59.565 --> 00:04:00.625 When I was a postdoc,

NOTE Confidence: 0.9904818

00:04:00.685 --> 00:04:01.965 this was an area that

NOTE Confidence: 0.9904818

00:04:01.965 --> 00:04:02.625 I spent,

NOTE Confidence: 0.987391

00:04:03.165 --> 00:04:04.144 quite some time,

NOTE Confidence: 0.99761266

00:04:04.605 --> 00:04:06.220 thinking about and really thinking

NOTE Confidence: 0.99761266

00:04:06.220 --> 00:04:07.660 about the commonalities that we

NOTE Confidence: 0.99761266

00:04:07.660 --> 00:04:08.480 were observing,

NOTE Confidence: 0.98865736

00:04:09.180 --> 00:04:10.959 in our different neuroimaging work.

NOTE Confidence: 0.92385936

00:04:11.340 --> 00:04:12.940 And and I I observed

NOTE Confidence: 0.92385936

00:04:12.940 --> 00:04:14.620 these same networks and circuits

NOTE Confidence: 0.92385936

00:04:14.620 --> 00:04:15.519 coming up across,

NOTE Confidence: 0.978837

00:04:15.819 --> 00:04:17.180 different conditions in my own

NOTE Confidence: 0.978837

00:04:17.180 --> 00:04:18.080 clinical work.

NOTE Confidence: 0.9610686

00:04:19.165 --> 00:04:20.285 I I also observed a

NOTE Confidence: 0.9610686

00:04:20.285 --> 00:04:22.525 lot of, commonalities with emotion

NOTE Confidence: 0.9610686

00:04:22.525 --> 00:04:23.025 dysregulation,

NOTE Confidence: 0.9825325

00:04:24.525 --> 00:04:26.305 across child mental health conditions.

NOTE Confidence: 0.9825325

00:04:26.525 --> 00:04:27.805 These are just a few

NOTE Confidence: 0.9825325

00:04:27.805 --> 00:04:28.305 to,

NOTE Confidence: 0.9595329

00:04:28.605 --> 00:04:29.964 to spotlight. And today, we

NOTE Confidence: 0.9595329

00:04:29.964 --> 00:04:31.650 will be focusing on, disruptive

NOTE Confidence: 0.9595329

00:04:31.729 --> 00:04:33.889 behavior disorders and autism spectrum,

NOTE Confidence: 0.9595329

00:04:33.889 --> 00:04:35.169 but this is, in no

NOTE Confidence: 0.9595329

00:04:35.169 --> 00:04:36.630 way an exhaustive list.

NOTE Confidence: 0.99141264

00:04:38.529 --> 00:04:39.570 And when we think about

NOTE Confidence: 0.99141264

00:04:39.570 --> 00:04:41.270 emotion regulation as a transdiagnostic,

NOTE Confidence: 0.9987576

00:04:42.210 --> 00:04:42.710 construct,

NOTE Confidence: 0.96873105

00:04:43.250 --> 00:04:45.085 generally, studies have shown decreased

NOTE Confidence: 0.96873105

00:04:45.085 --> 00:04:46.544 use of adaptive strategies,

NOTE Confidence: 0.968865

00:04:47.004 --> 00:04:48.224 such as, reappraisal,

NOTE Confidence: 0.9516667

00:04:49.324 --> 00:04:51.425 and increased use of maladaptive

NOTE Confidence: 0.9516667

00:04:51.645 --> 00:04:54.384 strategies such as, rumination or,

NOTE Confidence: 0.93582106

00:04:54.764 --> 00:04:56.205 or suppression as I mentioned

NOTE Confidence: 0.93582106

00:04:56.205 --> 00:04:56.705 earlier.

NOTE Confidence: 0.96799195

00:04:58.180 --> 00:04:59.779 If we, think about this

NOTE Confidence: 0.96799195

00:04:59.779 --> 00:05:00.839 on a neural level,

NOTE Confidence: 0.96992797

00:05:02.180 --> 00:05:03.860 there's been several meta analyses

NOTE Confidence: 0.96992797

00:05:03.860 --> 00:05:05.779 that have, really sought to

NOTE Confidence: 0.96992797

00:05:05.779 --> 00:05:07.240 understand what are the main,

NOTE Confidence: 0.9683254

00:05:07.860 --> 00:05:09.380 nodes or regions or networks

NOTE Confidence: 0.9683254

00:05:09.380 --> 00:05:11.060 involved in emotion regulation. I

NOTE Confidence: 0.9683254

00:05:11.060 --> 00:05:12.339 just wanna spotlight a few

NOTE Confidence: 0.9683254

00:05:12.339 --> 00:05:13.720 here. Again, this is not,

NOTE Confidence: 0.9683254

00:05:13.995 --> 00:05:15.695 an exhaustive list, but just,

NOTE Confidence: 0.9779351

00:05:16.235 --> 00:05:17.675 to spotlight a few hubs

NOTE Confidence: 0.9779351

00:05:17.675 --> 00:05:19.115 that, are known to play

NOTE Confidence: 0.9779351

00:05:19.115 --> 00:05:21.135 a critical role in, modulating

NOTE Confidence: 0.9779351

00:05:21.275 --> 00:05:21.775 emotions.

NOTE Confidence: 0.98000467

00:05:22.395 --> 00:05:23.915 And this really, spans the

NOTE Confidence: 0.98000467

00:05:23.915 --> 00:05:25.455 lateral prefrontal cortex,

NOTE Confidence: 0.93727124

00:05:25.915 --> 00:05:26.415 medial,

NOTE Confidence: 0.9881003

00:05:26.795 --> 00:05:28.735 prefrontal cortex as well,

NOTE Confidence: 0.96109784

00:05:29.220 --> 00:05:29.960 and temporoparietal,

NOTE Confidence: 0.9877345

00:05:30.979 --> 00:05:32.819 cortex. And, so I've broken

NOTE Confidence: 0.9877345

00:05:32.819 --> 00:05:34.819 this down by, subregions as

NOTE Confidence: 0.9877345

00:05:34.819 --> 00:05:36.680 well, because the the ventral

NOTE Confidence: 0.9877345

00:05:36.740 --> 00:05:37.400 and dorsal,

NOTE Confidence: 0.983914

00:05:37.940 --> 00:05:40.020 prefrontal cortex are are really

NOTE Confidence: 0.983914

00:05:40.020 --> 00:05:41.539 large functional areas that can

NOTE Confidence: 0.983914

00:05:41.539 --> 00:05:43.139 be subdivided into many,

NOTE Confidence: 0.99949884

00:05:43.620 --> 00:05:44.120 subregions.

NOTE Confidence: 0.9876194

00:05:44.805 --> 00:05:45.605 But if we take a

NOTE Confidence: 0.9876194

00:05:45.605 --> 00:05:46.645 step back and think about

NOTE Confidence: 0.9876194

00:05:46.645 --> 00:05:47.464 these regions,

NOTE Confidence: 0.99577636

00:05:48.005 --> 00:05:49.125 and how they work together

NOTE Confidence: 0.99577636

00:05:49.125 --> 00:05:50.185 in concert and,

NOTE Confidence: 0.99841523

00:05:50.565 --> 00:05:51.545 to form networks,

NOTE Confidence: 0.95470244

00:05:52.245 --> 00:05:53.525 we can think about emotion

NOTE Confidence: 0.95470244

00:05:53.525 --> 00:05:56.085 regulation recruiting several cognitive control

NOTE Confidence: 0.95470244

00:05:56.085 --> 00:05:57.285 networks. So this includes,

NOTE Confidence: 0.9267868

00:05:57.889 --> 00:05:59.110 networks such as frontoparietal,

NOTE Confidence: 0.84411913

00:05:59.570 --> 00:06:00.389 frontal limbic,

NOTE Confidence: 0.9408885

00:06:01.169 --> 00:06:03.350 default mode, tension, and salience.

NOTE Confidence: 0.9512231

00:06:04.610 --> 00:06:05.650 So the the,

NOTE Confidence: 0.9928192

00:06:06.050 --> 00:06:07.330 message I really want to

NOTE Confidence: 0.9928192

00:06:07.330 --> 00:06:09.110 emphasize here is emotion regulation,

NOTE Confidence: 0.94690585

00:06:09.889 --> 00:06:11.650 recruit several large scale networks

NOTE Confidence: 0.94690585

00:06:11.650 --> 00:06:13.430 that have overlapping functions,

NOTE Confidence: 0.99895537

00:06:14.075 --> 00:06:15.295 and nodes as well.

NOTE Confidence: 0.9939678

00:06:17.195 --> 00:06:18.815 The process of emotion regulation

NOTE Confidence: 0.9939678

00:06:19.035 --> 00:06:19.535 is,

NOTE Confidence: 0.96280164

00:06:20.715 --> 00:06:22.075 something that continues to develop

NOTE Confidence: 0.96280164

00:06:22.075 --> 00:06:24.415 this dynamic. It it, develops

NOTE Confidence: 0.96280164

00:06:24.555 --> 00:06:26.940 throughout, young childhood, throughout even

NOTE Confidence: 0.96280164

00:06:26.940 --> 00:06:27.839 late adolescence.

NOTE Confidence: 0.98463744

00:06:28.620 --> 00:06:29.120 And,

NOTE Confidence: 0.9510765

00:06:29.660 --> 00:06:32.479 these, skills in executive functioning,

NOTE Confidence: 0.9510765

00:06:32.539 --> 00:06:34.380 cognitive control more broadly really

NOTE Confidence: 0.9510765

00:06:34.380 --> 00:06:35.580 come online and and really

NOTE Confidence: 0.9510765

00:06:35.580 --> 00:06:36.860 start fine tuning around the

NOTE Confidence: 0.9510765

00:06:36.860 --> 00:06:37.759 age of ten,

NOTE Confidence: 0.9117958

00:06:38.775 --> 00:06:40.795 and mid adolescence and onward.

NOTE Confidence: 0.9780259

00:06:41.335 --> 00:06:42.295 So this is really a

NOTE Confidence: 0.9780259

00:06:42.295 --> 00:06:42.535 process that,

NOTE Confidence: 0.9480357

00:06:44.295 --> 00:06:44.795 behaviorally,

NOTE Confidence: 0.9680056

00:06:45.575 --> 00:06:47.355 is fine tuning across development

NOTE Confidence: 0.9680056

00:06:47.415 --> 00:06:47.915 alongside,

NOTE Confidence: 0.9911621

00:06:48.695 --> 00:06:50.635 development of these functional networks.

NOTE Confidence: 0.9711581

00:06:51.470 --> 00:06:52.430 And this is actually just

NOTE Confidence: 0.9711581

00:06:52.430 --> 00:06:53.790 one aspect of,

NOTE Confidence: 0.95528436

00:06:54.589 --> 00:06:56.190 of, the brain's architecture when

NOTE Confidence: 0.95528436

00:06:56.190 --> 00:06:57.150 you think about it because

NOTE Confidence: 0.95528436

00:06:57.150 --> 00:06:58.430 there's functional networks and then

NOTE Confidence: 0.95528436

00:06:58.430 --> 00:07:00.350 you have maturation taking place

NOTE Confidence: 0.95528436

00:07:00.350 --> 00:07:01.490 in this, structural,

NOTE Confidence: 0.9956451

00:07:02.430 --> 00:07:03.550 aspects of the brain as

NOTE Confidence: 0.9956451

00:07:03.550 --> 00:07:04.430 well. So there's a lot

NOTE Confidence: 0.9956451

00:07:04.430 --> 00:07:06.370 happening during, this development.

NOTE Confidence: 0.9607959

00:07:07.235 --> 00:07:08.534 In general, we,

NOTE Confidence: 0.9939106

00:07:09.154 --> 00:07:10.215 expect to see,

NOTE Confidence: 0.9556367

00:07:11.555 --> 00:07:12.694 a fine tune,

NOTE Confidence: 0.9363472

00:07:13.315 --> 00:07:15.315 synchrony across regions involved in

NOTE Confidence: 0.9363472

00:07:15.315 --> 00:07:16.215 emotion control,

NOTE Confidence: 0.8806171

00:07:16.995 --> 00:07:19.414 and in dampening, motion generative

NOTE Confidence: 0.8806171

00:07:19.474 --> 00:07:19.974 regions.

NOTE Confidence: 0.8370333

00:07:22.500 --> 00:07:24.039 The frontal limbic circuit,

NOTE Confidence: 0.9054063

00:07:24.500 --> 00:07:26.419 typically is, might be thought

NOTE Confidence: 0.9054063

00:07:26.419 --> 00:07:28.280 to involve amygdala to prefrontal,

NOTE Confidence: 0.9147272

00:07:28.900 --> 00:07:29.400 cortex.

NOTE Confidence: 0.95990664

00:07:30.340 --> 00:07:30.840 And,

NOTE Confidence: 0.9996874

00:07:31.379 --> 00:07:32.500 this is a circuit that's

NOTE Confidence: 0.9996874

00:07:32.500 --> 00:07:33.319 been consistently

NOTE Confidence: 0.99948466

00:07:33.620 --> 00:07:34.759 implicated in

NOTE Confidence: 0.9898815

00:07:35.485 --> 00:07:37.345 several child mental health disorders,

NOTE Confidence: 0.9898815

00:07:37.405 --> 00:07:39.265 not just disruptive behavior disorders.

NOTE Confidence: 0.98084754

00:07:40.685 --> 00:07:41.725 But my work here is

NOTE Confidence: 0.98084754

00:07:41.725 --> 00:07:43.025 really focused on,

NOTE Confidence: 0.97264063

00:07:43.805 --> 00:07:45.245 initially and this has really

NOTE Confidence: 0.97264063

00:07:45.245 --> 00:07:46.285 been the foundation of a

NOTE Confidence: 0.97264063

00:07:46.285 --> 00:07:47.405 lot of my work early

NOTE Confidence: 0.97264063

00:07:47.405 --> 00:07:47.970 on in,

NOTE Confidence: 0.98453635

00:07:48.610 --> 00:07:50.690 focusing on disruptive behavior disorders,

NOTE Confidence: 0.98453635

00:07:50.690 --> 00:07:52.370 which, really has been an

NOTE Confidence: 0.98453635

00:07:52.370 --> 00:07:52.870 ideal,

NOTE Confidence: 0.98053044

00:07:53.890 --> 00:07:55.410 model disorder to to think

NOTE Confidence: 0.98053044

00:07:55.410 --> 00:07:56.950 of it because there's decades

NOTE Confidence: 0.98053044

00:07:57.170 --> 00:07:59.490 of, fMRI research that's focused

NOTE Confidence: 0.98053044

00:07:59.490 --> 00:08:00.390 on this area.

NOTE Confidence: 0.9547848

00:08:01.425 --> 00:08:02.085 And disruptive,

NOTE Confidence: 0.9768174

00:08:03.105 --> 00:08:04.785 mood and behavior disorders are

NOTE Confidence: 0.9768174

00:08:04.785 --> 00:08:07.425 typically characterized by, impairments and

NOTE Confidence: 0.9768174

00:08:07.425 --> 00:08:08.405 emotion regulation.

NOTE Confidence: 0.975277

00:08:09.905 --> 00:08:11.265 When we think about disruptive

NOTE Confidence: 0.975277

00:08:11.265 --> 00:08:12.485 behaviors, this can,

NOTE Confidence: 0.9636056

00:08:13.490 --> 00:08:15.170 include different classes of symptoms

NOTE Confidence: 0.9636056

00:08:15.170 --> 00:08:16.150 such as maladaptive,

NOTE Confidence: 0.98209274

00:08:16.770 --> 00:08:17.830 aggression, noncompliance,

NOTE Confidence: 0.9590691

00:08:18.450 --> 00:08:19.910 irritability, or anger.

NOTE Confidence: 0.9879789

00:08:20.690 --> 00:08:22.230 There's different ways to,

NOTE Confidence: 0.9239267

00:08:22.850 --> 00:08:24.290 categorize this as well, and

NOTE Confidence: 0.9239267

00:08:24.290 --> 00:08:25.990 my lab's work actually takes,

NOTE Confidence: 0.98214614

00:08:26.835 --> 00:08:27.955 a dual approach. And we

NOTE Confidence: 0.98214614

00:08:27.955 --> 00:08:29.235 think about this also as

NOTE Confidence: 0.98214614

00:08:29.235 --> 00:08:31.335 a DSM five diagnostic classification,

NOTE Confidence: 0.985199

00:08:32.355 --> 00:08:34.455 that includes disruptive behavior disorders,

NOTE Confidence: 0.970087

00:08:34.835 --> 00:08:36.115 that can be unpacked to

NOTE Confidence: 0.970087

00:08:36.115 --> 00:08:38.195 oppositional defiant disorder and conduct

NOTE Confidence: 0.970087

00:08:38.195 --> 00:08:38.695 disorder,

NOTE Confidence: 0.95513725

00:08:39.235 --> 00:08:40.455 as well as a transdiagnostic

NOTE Confidence: 0.99971473

00:08:41.075 --> 00:08:41.575 construct.

NOTE Confidence: 0.9866003

00:08:42.330 --> 00:08:43.370 What I mean by this

NOTE Confidence: 0.9866003

00:08:43.370 --> 00:08:45.929 is, thinking about disruptive behavior

NOTE Confidence: 0.9866003

00:08:45.929 --> 00:08:46.429 problems,

NOTE Confidence: 0.9489962

00:08:47.610 --> 00:08:48.970 in terms of cutting across

NOTE Confidence: 0.9489962

00:08:48.970 --> 00:08:50.510 several diagnostic categories,

NOTE Confidence: 0.94607913

00:08:51.610 --> 00:08:53.770 and and, occurring across a

NOTE Confidence: 0.94607913

00:08:53.770 --> 00:08:55.230 continuum in the population.

NOTE Confidence: 0.9510954

00:08:57.515 --> 00:08:58.554 In our own work, we

NOTE Confidence: 0.9510954

00:08:58.554 --> 00:08:59.054 found,

NOTE Confidence: 0.99257207

00:09:00.235 --> 00:09:01.375 impairments in

NOTE Confidence: 0.91915107

00:09:03.035 --> 00:09:05.454 emotion regulation capacity linked to

NOTE Confidence: 0.91915107

00:09:05.595 --> 00:09:07.615 disruptive behavior problems. And,

NOTE Confidence: 0.9429792

00:09:08.235 --> 00:09:09.755 this is work actually from

NOTE Confidence: 0.9429792

00:09:09.755 --> 00:09:11.580 a student, summer student in

NOTE Confidence: 0.9429792

00:09:11.580 --> 00:09:12.700 my lab who continues to

NOTE Confidence: 0.9429792

00:09:12.700 --> 00:09:14.880 collaborate, Olivia, Chocha, who,

NOTE Confidence: 0.9857463

00:09:15.340 --> 00:09:16.780 really focused on this for

NOTE Confidence: 0.9857463

00:09:16.780 --> 00:09:17.920 her summer internship.

NOTE Confidence: 0.995848

00:09:18.620 --> 00:09:19.500 And this was,

NOTE Confidence: 0.8775971

00:09:21.179 --> 00:09:22.700 you know, very, you know,

NOTE Confidence: 0.8775971

00:09:22.700 --> 00:09:24.140 interesting to see this to

NOTE Confidence: 0.8775971

00:09:24.380 --> 00:09:24.880 this,

NOTE Confidence: 0.8038662

00:09:25.260 --> 00:09:26.905 direct relation ship between,

NOTE Confidence: 0.95755136

00:09:27.525 --> 00:09:29.145 on the x axis increasing

NOTE Confidence: 0.95755136

00:09:29.285 --> 00:09:31.045 emotion regulation impairment and on

NOTE Confidence: 0.95755136

00:09:31.045 --> 00:09:32.505 the y axis increasing,

NOTE Confidence: 0.951382

00:09:33.365 --> 00:09:35.445 externalizing behavior problems. So this

NOTE Confidence: 0.951382

00:09:35.445 --> 00:09:37.525 is, really what we have

NOTE Confidence: 0.951382

00:09:37.525 --> 00:09:39.125 hypothesized. This is in a

NOTE Confidence: 0.951382

00:09:39.125 --> 00:09:41.090 relatively small sample, but I

NOTE Confidence: 0.951382

00:09:41.090 --> 00:09:42.690 wanna emphasize even at a

NOTE Confidence: 0.951382

00:09:42.690 --> 00:09:43.970 sample this small, we still

NOTE Confidence: 0.951382

00:09:43.970 --> 00:09:46.309 see these, these moderate effects.

NOTE Confidence: 0.94617254

00:09:48.610 --> 00:09:49.570 Now if we think about

NOTE Confidence: 0.94617254

00:09:49.570 --> 00:09:50.929 on a neural level, what,

NOTE Confidence: 0.99561286

00:09:51.970 --> 00:09:52.630 what transdiagnostic

NOTE Confidence: 0.9718515

00:09:53.090 --> 00:09:54.690 markers might be implicated in

NOTE Confidence: 0.9718515

00:09:54.690 --> 00:09:56.050 disruptive behavior? And this was

NOTE Confidence: 0.9718515

00:09:56.050 --> 00:09:57.005 really one of the first

NOTE Confidence: 0.9718515

00:09:57.005 --> 00:09:58.285 questions that has driven a

NOTE Confidence: 0.9718515

00:09:58.285 --> 00:09:59.345 lot of my work,

NOTE Confidence: 0.9409321

00:09:59.804 --> 00:10:01.245 started during postdoc and has

NOTE Confidence: 0.9409321

00:10:01.245 --> 00:10:02.385 continued actually,

NOTE Confidence: 0.9571943

00:10:02.925 --> 00:10:04.385 today in in in leveraging

NOTE Confidence: 0.9571943

00:10:04.445 --> 00:10:04.945 different,

NOTE Confidence: 0.994634

00:10:05.565 --> 00:10:07.565 neuroimaging approaches to understand these

NOTE Confidence: 0.994634

00:10:07.565 --> 00:10:08.065 networks.

NOTE Confidence: 0.99183995

00:10:09.005 --> 00:10:10.045 And one of the first

NOTE Confidence: 0.99183995

00:10:10.045 --> 00:10:10.545 questions,

NOTE Confidence: 0.98022234

00:10:11.245 --> 00:10:13.179 that we really sought, to

NOTE Confidence: 0.98022234

00:10:13.179 --> 00:10:14.880 to to address was understanding,

NOTE Confidence: 0.95919186

00:10:15.740 --> 00:10:16.800 if there's transdiagnostic,

NOTE Confidence: 0.9779869

00:10:18.220 --> 00:10:19.740 markers in this frontal limbic

NOTE Confidence: 0.9779869

00:10:19.740 --> 00:10:22.480 circuit that's associated with, maladaptive

NOTE Confidence: 0.9779869

00:10:22.700 --> 00:10:23.839 aggression in children.

NOTE Confidence: 0.8652082

00:10:24.300 --> 00:10:24.620 And,

NOTE Confidence: 0.9847113

00:10:25.175 --> 00:10:26.134 and and here, this was

NOTE Confidence: 0.9847113

00:10:26.134 --> 00:10:27.975 a transdiagnostic sample of one

NOTE Confidence: 0.9847113

00:10:27.975 --> 00:10:28.454 hundred,

NOTE Confidence: 0.98433024

00:10:29.495 --> 00:10:30.855 thirty three children, a large

NOTE Confidence: 0.98433024

00:10:30.855 --> 00:10:32.375 portion of which had elevated

NOTE Confidence: 0.98433024

00:10:32.375 --> 00:10:33.274 aggressive behavior.

NOTE Confidence: 0.95863897

00:10:34.375 --> 00:10:35.574 And and we use the

NOTE Confidence: 0.95863897

00:10:35.574 --> 00:10:37.175 CBCL aggression, and and this

NOTE Confidence: 0.95863897

00:10:37.175 --> 00:10:38.134 will be a theme actually

NOTE Confidence: 0.95863897

00:10:38.134 --> 00:10:39.490 throughout today. So So CBCL,

NOTE Confidence: 0.95863897

00:10:39.889 --> 00:10:41.410 or child behavior checklist is

NOTE Confidence: 0.95863897

00:10:41.410 --> 00:10:42.209 really one of the most

NOTE Confidence: 0.95863897

00:10:42.209 --> 00:10:44.470 widely used measure of, transdiagnostic

NOTE Confidence: 0.95121026

00:10:45.009 --> 00:10:45.509 symptoms.

NOTE Confidence: 0.9227346

00:10:46.929 --> 00:10:48.870 And the majority of participants,

NOTE Confidence: 0.95251495

00:10:49.329 --> 00:10:51.329 were diagnosed with oppositional defiant

NOTE Confidence: 0.95251495

00:10:51.329 --> 00:10:51.829 disorder,

NOTE Confidence: 0.9994391

00:10:52.615 --> 00:10:54.055 and they completed a task

NOTE Confidence: 0.9994391

00:10:54.055 --> 00:10:55.915 of implicit emotion regulation.

NOTE Confidence: 0.98680437

00:10:57.095 --> 00:10:58.135 So I should mention it

NOTE Confidence: 0.98680437

00:10:58.135 --> 00:11:00.295 with emotion regulation. And, another

NOTE Confidence: 0.98680437

00:11:00.295 --> 00:11:02.155 way to categorize emotion regulation

NOTE Confidence: 0.98680437

00:11:02.215 --> 00:11:03.975 is thinking about explicit and

NOTE Confidence: 0.98680437

00:11:03.975 --> 00:11:05.515 implicit emotion regulation.

NOTE Confidence: 0.9840245

00:11:06.640 --> 00:11:08.800 Now with explicit emotion regulation,

NOTE Confidence: 0.9840245

00:11:08.800 --> 00:11:10.000 this is typically what you

NOTE Confidence: 0.9840245

00:11:10.000 --> 00:11:11.300 might think of with reappraisal.

NOTE Confidence: 0.9840245

00:11:11.520 --> 00:11:13.140 There's, there's an instruction,

NOTE Confidence: 0.964258

00:11:13.679 --> 00:11:15.520 participants are typically taught to

NOTE Confidence: 0.964258

00:11:15.520 --> 00:11:16.740 down regulate emotions,

NOTE Confidence: 0.98410857

00:11:17.360 --> 00:11:18.320 and there's some type of

NOTE Confidence: 0.98410857

00:11:18.320 --> 00:11:20.605 effort, cautious effort that's involved

NOTE Confidence: 0.98410857

00:11:20.605 --> 00:11:21.505 in this process.

NOTE Confidence: 0.9984376

00:11:22.285 --> 00:11:23.725 When we think about implicit

NOTE Confidence: 0.9984376

00:11:23.725 --> 00:11:24.225 regulation,

NOTE Confidence: 0.98526335

00:11:25.085 --> 00:11:26.385 this is thought to occur,

NOTE Confidence: 0.9914908

00:11:27.885 --> 00:11:28.945 automatically without,

NOTE Confidence: 0.94337326

00:11:29.885 --> 00:11:31.665 cautious effort or instruction.

NOTE Confidence: 0.99972755

00:11:32.125 --> 00:11:33.829 So one common example

NOTE Confidence: 0.81762034

00:11:34.290 --> 00:11:35.569 or task of,

NOTE Confidence: 0.98469096

00:11:36.050 --> 00:11:38.069 engaging implicit regulation is,

NOTE Confidence: 0.96554655

00:11:38.529 --> 00:11:40.130 showing a series of emotionally

NOTE Confidence: 0.96554655

00:11:40.130 --> 00:11:41.110 expressive faces.

NOTE Confidence: 0.89192533

00:11:43.170 --> 00:11:44.309 And here, we,

NOTE Confidence: 0.94884384

00:11:44.929 --> 00:11:46.209 we we found that in,

NOTE Confidence: 0.8866074

00:11:47.295 --> 00:11:49.154 children with elevated aggression,

NOTE Confidence: 0.9488973

00:11:49.615 --> 00:11:50.115 severity,

NOTE Confidence: 0.97155195

00:11:50.575 --> 00:11:52.415 showed reduced connectivity between the

NOTE Confidence: 0.97155195

00:11:52.415 --> 00:11:53.774 amygdala and this region of

NOTE Confidence: 0.97155195

00:11:53.774 --> 00:11:55.395 the lateral prefrontal cortex,

NOTE Confidence: 0.94427156

00:11:56.015 --> 00:11:58.175 or dorsal lateral prefrontal cortex.

NOTE Confidence: 0.94427156

00:11:58.175 --> 00:11:59.875 I'll just abbreviate for DLPFC,

NOTE Confidence: 0.8259231

00:12:01.295 --> 00:12:01.740 but,

NOTE Confidence: 0.95435554

00:12:02.300 --> 00:12:03.660 this this region was,

NOTE Confidence: 0.9133204

00:12:04.140 --> 00:12:04.620 really,

NOTE Confidence: 0.87380815

00:12:05.020 --> 00:12:05.520 interesting,

NOTE Confidence: 0.9994509

00:12:06.140 --> 00:12:06.880 when we

NOTE Confidence: 0.95919204

00:12:07.660 --> 00:12:09.420 observe these findings, and and

NOTE Confidence: 0.95919204

00:12:09.420 --> 00:12:10.380 this is also a region

NOTE Confidence: 0.95919204

00:12:10.380 --> 00:12:11.420 that's known as a hub

NOTE Confidence: 0.95919204

00:12:11.420 --> 00:12:13.420 of emotion regulation. So I

NOTE Confidence: 0.95919204

00:12:13.420 --> 00:12:14.459 think what this is showing

NOTE Confidence: 0.95919204

00:12:14.459 --> 00:12:15.200 us is,

NOTE Confidence: 0.9766917

00:12:16.285 --> 00:12:17.585 children with elevated,

NOTE Confidence: 0.9582575

00:12:18.285 --> 00:12:20.285 disruptive behavior severity are showing,

NOTE Confidence: 0.9927051

00:12:20.685 --> 00:12:22.225 disruptions in this,

NOTE Confidence: 0.58651376

00:12:23.405 --> 00:12:24.225 front Olympic

NOTE Confidence: 0.91881734

00:12:24.845 --> 00:12:26.845 circuit that's that's really placed

NOTE Confidence: 0.91881734

00:12:26.845 --> 00:12:28.545 a critical role in modulating

NOTE Confidence: 0.96974623

00:12:29.820 --> 00:12:31.519 emotion generativity or overreactivity.

NOTE Confidence: 0.9923179

00:12:34.540 --> 00:12:36.140 We also know that, social

NOTE Confidence: 0.9923179

00:12:36.140 --> 00:12:37.839 impairments are very common,

NOTE Confidence: 0.9761805

00:12:38.220 --> 00:12:40.140 as well across disruptive behavior

NOTE Confidence: 0.9761805

00:12:40.140 --> 00:12:40.640 problems.

NOTE Confidence: 0.9813013

00:12:41.100 --> 00:12:41.839 This might,

NOTE Confidence: 0.85433286

00:12:42.700 --> 00:12:43.699 this might include difficulties with

NOTE Confidence: 0.85433286

00:12:43.699 --> 00:12:43.971 interpreting social cues, which often

NOTE Confidence: 0.85433286

00:12:43.971 --> 00:12:44.059 itself can be a trigger

NOTE Confidence: 0.85433286

00:12:44.059 --> 00:12:44.380 for,

NOTE Confidence: 0.98334426

00:12:49.125 --> 00:12:51.304 an anger response or frustration.

NOTE Confidence: 0.97746027

00:12:52.645 --> 00:12:54.085 One example might be hostile

NOTE Confidence: 0.97746027

00:12:54.085 --> 00:12:56.005 attribution bias where children might

NOTE Confidence: 0.97746027

00:12:56.005 --> 00:12:56.505 interpret

NOTE Confidence: 0.942125

00:12:57.380 --> 00:12:59.140 a social cue as, as

NOTE Confidence: 0.942125

00:12:59.140 --> 00:13:00.520 aggressive and and respond,

NOTE Confidence: 0.9973555

00:13:00.980 --> 00:13:02.200 with an anger response.

NOTE Confidence: 0.92335904

00:13:02.980 --> 00:13:04.179 And so here we wanted

NOTE Confidence: 0.92335904

00:13:04.179 --> 00:13:05.400 to ask, we,

NOTE Confidence: 0.9752177

00:13:06.260 --> 00:13:07.640 we know that social impairments

NOTE Confidence: 0.9752177

00:13:07.700 --> 00:13:09.940 are common to, disruptive behavior

NOTE Confidence: 0.9752177

00:13:09.940 --> 00:13:11.380 problems, in in youth, and

NOTE Confidence: 0.9752177

00:13:11.380 --> 00:13:12.440 we wanna understand,

NOTE Confidence: 0.9657046

00:13:13.355 --> 00:13:14.334 is is there,

NOTE Confidence: 0.97708577

00:13:14.954 --> 00:13:16.315 could the same circuit also

NOTE Confidence: 0.97708577

00:13:16.315 --> 00:13:17.535 play a role in,

NOTE Confidence: 0.9877661

00:13:17.995 --> 00:13:20.095 both aggression and social impairment?

NOTE Confidence: 0.9894291

00:13:20.954 --> 00:13:22.075 And to answer this, one

NOTE Confidence: 0.9894291

00:13:22.075 --> 00:13:23.295 of the best ways to,

NOTE Confidence: 0.9532564

00:13:24.875 --> 00:13:25.770 that that we

NOTE Confidence: 0.81316143

00:13:26.250 --> 00:13:27.790 we we address is was

NOTE Confidence: 0.81316143

00:13:27.850 --> 00:13:28.350 really,

NOTE Confidence: 0.9658222

00:13:29.370 --> 00:13:30.570 in a sample of children

NOTE Confidence: 0.9658222

00:13:30.570 --> 00:13:31.770 with autism. And we had

NOTE Confidence: 0.9658222

00:13:31.770 --> 00:13:32.970 two subgroups here. We had

NOTE Confidence: 0.9658222

00:13:32.970 --> 00:13:34.250 a sample of children with,

NOTE Confidence: 0.9658222

00:13:34.570 --> 00:13:36.670 autism and elevated aggressive behavior

NOTE Confidence: 0.9658222

00:13:36.890 --> 00:13:38.110 and autism with,

NOTE Confidence: 0.9002176

00:13:39.130 --> 00:13:41.305 low levels of, aggression, which

NOTE Confidence: 0.9002176

00:13:41.305 --> 00:13:42.665 is is termed here ASD

NOTE Confidence: 0.9002176

00:13:42.665 --> 00:13:43.165 alone.

NOTE Confidence: 0.99401546

00:13:43.705 --> 00:13:44.985 And there was one region

NOTE Confidence: 0.99401546

00:13:44.985 --> 00:13:45.485 that,

NOTE Confidence: 0.996328

00:13:45.865 --> 00:13:46.985 really came to the top

NOTE Confidence: 0.996328

00:13:46.985 --> 00:13:47.645 and was,

NOTE Confidence: 0.9697225

00:13:49.385 --> 00:13:51.005 in terms of, differentiating

NOTE Confidence: 0.98085326

00:13:51.305 --> 00:13:53.140 children with, autism with and

NOTE Confidence: 0.98085326

00:13:53.140 --> 00:13:54.500 without aggression. And this was,

NOTE Confidence: 0.98085326

00:13:54.900 --> 00:13:56.600 connectivity. This is showing connectivity

NOTE Confidence: 0.98085326

00:13:56.660 --> 00:13:58.500 between the amygdala and this

NOTE Confidence: 0.98085326

00:13:58.500 --> 00:14:00.420 region of the lateral PFC

NOTE Confidence: 0.98085326

00:14:00.420 --> 00:14:02.040 called the ventral lateral prefrontal

NOTE Confidence: 0.98085326

00:14:02.179 --> 00:14:02.679 cortex.

NOTE Confidence: 0.99350023

00:14:03.380 --> 00:14:04.820 Now this was interesting because

NOTE Confidence: 0.99350023

00:14:04.820 --> 00:14:05.559 this region,

NOTE Confidence: 0.98385364

00:14:06.335 --> 00:14:07.295 for the first time, we

NOTE Confidence: 0.98385364

00:14:07.295 --> 00:14:09.375 found associations where children with

NOTE Confidence: 0.98385364

00:14:09.375 --> 00:14:11.295 autism and aggression showed reduced

NOTE Confidence: 0.98385364

00:14:11.295 --> 00:14:13.535 connectivity in this, circuit relative

NOTE Confidence: 0.98385364

00:14:13.535 --> 00:14:14.835 to children with autism,

NOTE Confidence: 0.9613278

00:14:15.775 --> 00:14:17.535 without aggression. And it's interesting

NOTE Confidence: 0.9613278

00:14:17.535 --> 00:14:17.820 that,

NOTE Confidence: 0.87418896

00:14:19.100 --> 00:14:20.940 within a sample that's,

NOTE Confidence: 0.92360383

00:14:21.340 --> 00:14:22.880 in enriched for this social,

NOTE Confidence: 0.9880247

00:14:24.300 --> 00:14:26.380 impairment phenotype, we still find

NOTE Confidence: 0.9880247

00:14:26.380 --> 00:14:28.400 this, distinction in these circuits.

NOTE Confidence: 0.987404

00:14:30.140 --> 00:14:31.260 This is just another way

NOTE Confidence: 0.987404

00:14:31.260 --> 00:14:32.560 of plotting these findings,

NOTE Confidence: 0.98312175

00:14:33.435 --> 00:14:35.455 and where where we have,

NOTE Confidence: 0.95538616

00:14:37.195 --> 00:14:38.555 aggressive behavior on the x

NOTE Confidence: 0.95538616

00:14:38.555 --> 00:14:40.635 axis and connectivity strength on

NOTE Confidence: 0.95538616

00:14:40.635 --> 00:14:41.535 the y axis.

NOTE Confidence: 0.99747896

00:14:45.050 --> 00:14:46.410 So everything I've discussed so

NOTE Confidence: 0.99747896

00:14:46.410 --> 00:14:48.029 far has really focused on,

NOTE Confidence: 0.9687901

00:14:48.649 --> 00:14:49.149 understanding,

NOTE Confidence: 0.7936584

00:14:50.170 --> 00:14:52.029 one particular circuit and and,

NOTE Confidence: 0.9464163

00:14:52.490 --> 00:14:53.769 the approach that we can

NOTE Confidence: 0.9464163

00:14:53.769 --> 00:14:55.129 use to understand a particular

NOTE Confidence: 0.9464163

00:14:55.129 --> 00:14:56.329 circuit is what we might

NOTE Confidence: 0.9464163

00:14:56.329 --> 00:14:58.009 call seed based connectivity. So

NOTE Confidence: 0.9464163

00:14:58.009 --> 00:14:59.655 we can, take the time

NOTE Confidence: 0.9464163

00:14:59.655 --> 00:15:00.935 course of one region such

NOTE Confidence: 0.9464163

00:15:00.935 --> 00:15:02.395 as amygdala and test,

NOTE Confidence: 0.995247

00:15:02.775 --> 00:15:04.055 its correlation to all other

NOTE Confidence: 0.995247

00:15:04.055 --> 00:15:05.495 voxels across the brain. This

NOTE Confidence: 0.995247

00:15:05.495 --> 00:15:06.615 is what we call c

NOTE Confidence: 0.995247

00:15:06.615 --> 00:15:07.355 based connectivity

NOTE Confidence: 0.7384279

00:15:07.655 --> 00:15:08.155 or,

NOTE Confidence: 0.9440634

00:15:08.615 --> 00:15:09.515 c to voxel.

NOTE Confidence: 0.96496034

00:15:10.535 --> 00:15:12.215 Now another approach is,

NOTE Confidence: 0.94498867

00:15:13.750 --> 00:15:14.949 a bit more extensive in

NOTE Confidence: 0.94498867

00:15:14.949 --> 00:15:15.769 the way that,

NOTE Confidence: 0.9368369

00:15:16.230 --> 00:15:17.209 you can take,

NOTE Confidence: 0.9766745

00:15:18.790 --> 00:15:20.630 connections from every single,

NOTE Confidence: 0.95166034

00:15:21.029 --> 00:15:21.990 region of the brain. And,

NOTE Confidence: 0.95166034

00:15:21.990 --> 00:15:23.110 of course, there's many different

NOTE Confidence: 0.95166034

00:15:23.110 --> 00:15:24.389 ways to parcelate the brain.

NOTE Confidence: 0.95166034

00:15:24.389 --> 00:15:25.529 This can be a separate,

NOTE Confidence: 0.9980456

00:15:25.990 --> 00:15:27.509 discussion in itself. There's many

NOTE Confidence: 0.9980456

00:15:27.509 --> 00:15:29.050 different atlases out there

NOTE Confidence: 0.9880285

00:15:29.405 --> 00:15:31.025 and different ways of functionally,

NOTE Confidence: 0.92304045

00:15:31.725 --> 00:15:33.605 or structurally parceulating the brain.

NOTE Confidence: 0.92304045

00:15:33.965 --> 00:15:34.465 And

NOTE Confidence: 0.97513926

00:15:35.325 --> 00:15:36.845 and here, what you can

NOTE Confidence: 0.97513926

00:15:36.845 --> 00:15:37.645 do is,

NOTE Confidence: 0.9818775

00:15:38.845 --> 00:15:39.965 take each of these regions

NOTE Confidence: 0.9818775

00:15:39.965 --> 00:15:41.165 and correlate them to each

NOTE Confidence: 0.9818775

00:15:41.165 --> 00:15:42.605 other, and this is what

NOTE Confidence: 0.9818775

00:15:42.605 --> 00:15:43.405 we have when when we

NOTE Confidence: 0.9818775

00:15:43.405 --> 00:15:45.005 think about the connectome. So

NOTE Confidence: 0.9818775

00:15:45.005 --> 00:15:46.500 you you you get, very

NOTE Confidence: 0.9818775

00:15:46.500 --> 00:15:47.940 rich information about the brain,

NOTE Confidence: 0.9818775

00:15:47.940 --> 00:15:49.620 about this interconnectedness of the

NOTE Confidence: 0.9818775

00:15:49.620 --> 00:15:50.600 brain as well.

NOTE Confidence: 0.96721107

00:15:51.540 --> 00:15:52.980 It's interesting to think about

NOTE Confidence: 0.96721107

00:15:52.980 --> 00:15:53.640 when we

NOTE Confidence: 0.94688505

00:15:54.339 --> 00:15:55.940 think about the connectome and

NOTE Confidence: 0.94688505

00:15:55.940 --> 00:15:56.899 and, I guess, where we've

NOTE Confidence: 0.94688505

00:15:56.899 --> 00:15:58.040 come in in neuroscience,

NOTE Confidence: 0.94193643

00:15:59.495 --> 00:16:00.855 just thinking and,

NOTE Confidence: 0.99398464

00:16:01.495 --> 00:16:02.615 thinking about the use of

NOTE Confidence: 0.99398464

00:16:02.615 --> 00:16:04.154 the term human connectome,

NOTE Confidence: 0.96655947

00:16:05.015 --> 00:16:05.975 where we see there is

NOTE Confidence: 0.96655947

00:16:05.975 --> 00:16:07.675 a surge, or an increasing

NOTE Confidence: 0.96655947

00:16:07.735 --> 00:16:08.695 surge in,

NOTE Confidence: 0.9886691

00:16:09.095 --> 00:16:10.295 use of this term around

NOTE Confidence: 0.9886691

00:16:10.295 --> 00:16:11.195 twenty ten,

NOTE Confidence: 0.93644494

00:16:11.654 --> 00:16:13.175 which is which is where

NOTE Confidence: 0.93644494

00:16:13.175 --> 00:16:15.200 the human connectome project was

NOTE Confidence: 0.93644494

00:16:15.200 --> 00:16:16.020 launched. So,

NOTE Confidence: 0.9800736

00:16:16.560 --> 00:16:17.760 and I have other approaches

NOTE Confidence: 0.9800736

00:16:17.760 --> 00:16:19.120 here just for reference. So

NOTE Confidence: 0.9800736

00:16:19.120 --> 00:16:21.600 there's, amygdala connectivity and seed

NOTE Confidence: 0.9800736

00:16:21.600 --> 00:16:22.340 based connectivity,

NOTE Confidence: 0.9218785

00:16:23.120 --> 00:16:24.160 and I just placed these

NOTE Confidence: 0.9218785

00:16:24.160 --> 00:16:25.380 here for reference. But,

NOTE Confidence: 0.939206

00:16:25.840 --> 00:16:27.360 you you know, hopefully, you

NOTE Confidence: 0.939206

00:16:27.360 --> 00:16:28.080 you can,

NOTE Confidence: 0.96492594

00:16:28.640 --> 00:16:30.020 really get a sense for,

NOTE Confidence: 0.94779587

00:16:30.925 --> 00:16:32.365 how much on the frontier

NOTE Confidence: 0.94779587

00:16:32.365 --> 00:16:33.565 this is and understanding the

NOTE Confidence: 0.94779587

00:16:33.565 --> 00:16:35.245 connectome, especially with the launch

NOTE Confidence: 0.94779587

00:16:35.245 --> 00:16:36.925 of the human connectome project

NOTE Confidence: 0.94779587

00:16:36.925 --> 00:16:37.904 at that time.

NOTE Confidence: 0.96510565

00:16:40.445 --> 00:16:41.725 So as I mentioned before,

NOTE Confidence: 0.96510565

00:16:41.725 --> 00:16:43.230 with the connectome, you get,

NOTE Confidence: 0.97747093

00:16:43.949 --> 00:16:45.389 really a vast amount of,

NOTE Confidence: 0.97747093

00:16:45.790 --> 00:16:46.290 of,

NOTE Confidence: 0.99826306

00:16:46.990 --> 00:16:48.529 data about the brain.

NOTE Confidence: 0.9882035

00:16:49.070 --> 00:16:50.910 And, so just to,

NOTE Confidence: 0.9439435

00:16:51.470 --> 00:16:52.990 spotlight a few terms that,

NOTE Confidence: 0.9860171

00:16:53.790 --> 00:16:55.089 things that might be important

NOTE Confidence: 0.9860171

00:16:55.149 --> 00:16:56.449 to emphasize here,

NOTE Confidence: 0.97595197

00:16:57.275 --> 00:16:58.255 Nodes indicate

NOTE Confidence: 0.97623634

00:16:58.555 --> 00:17:00.075 are indicated by these spheres,

NOTE Confidence: 0.97623634

00:17:00.075 --> 00:17:01.195 and we can think about

NOTE Confidence: 0.97623634

00:17:01.195 --> 00:17:02.395 these as as nodes or

NOTE Confidence: 0.97623634

00:17:02.395 --> 00:17:02.895 regions.

NOTE Confidence: 0.9851847

00:17:03.835 --> 00:17:06.015 And, these lines are indicative

NOTE Confidence: 0.9851847

00:17:06.155 --> 00:17:07.355 of what we call edges

NOTE Confidence: 0.9851847

00:17:07.355 --> 00:17:08.015 or connections,

NOTE Confidence: 0.99892396

00:17:08.555 --> 00:17:09.615 between these nodes.

NOTE Confidence: 0.9905834

00:17:10.350 --> 00:17:10.750 And,

NOTE Confidence: 0.9731405

00:17:11.150 --> 00:17:12.190 now you you might see

NOTE Confidence: 0.9731405

00:17:12.270 --> 00:17:13.390 you're gonna see these rendered

NOTE Confidence: 0.9731405

00:17:13.390 --> 00:17:15.410 brains and these, different spheres.

NOTE Confidence: 0.9731405

00:17:15.710 --> 00:17:16.670 Another thing to keep in

NOTE Confidence: 0.9731405

00:17:16.670 --> 00:17:17.970 mind is generally in connectomics,

NOTE Confidence: 0.9731405

00:17:18.190 --> 00:17:18.690 the,

NOTE Confidence: 0.93011814

00:17:18.990 --> 00:17:20.429 radius of the spear denotes

NOTE Confidence: 0.93011814

00:17:20.429 --> 00:17:22.109 the extent of connections. So

NOTE Confidence: 0.93011814

00:17:22.109 --> 00:17:23.549 spears that are larger have

NOTE Confidence: 0.93011814

00:17:23.549 --> 00:17:24.530 more of an extensive,

NOTE Confidence: 0.9830345

00:17:25.945 --> 00:17:27.484 set of connections or edges.

NOTE Confidence: 0.9897881

00:17:28.505 --> 00:17:29.545 And when we think about

NOTE Confidence: 0.9897881

00:17:29.545 --> 00:17:30.905 how we can,

NOTE Confidence: 0.98932374

00:17:31.305 --> 00:17:31.805 analyze,

NOTE Confidence: 0.9417847

00:17:32.265 --> 00:17:33.465 the connectome or data from

NOTE Confidence: 0.9417847

00:17:33.465 --> 00:17:34.445 the human connectome,

NOTE Confidence: 0.9821597

00:17:34.825 --> 00:17:36.345 and today, I'm focusing on

NOTE Confidence: 0.9821597

00:17:36.345 --> 00:17:37.625 the functional connectome. So I

NOTE Confidence: 0.9821597

00:17:37.625 --> 00:17:38.905 should make that distinction here

NOTE Confidence: 0.9821597

00:17:38.905 --> 00:17:40.919 that there's structural and functional

NOTE Confidence: 0.9821597

00:17:40.919 --> 00:17:41.419 connectome.

NOTE Confidence: 0.9759259

00:17:41.960 --> 00:17:43.480 Here we'll be focusing on,

NOTE Confidence: 0.9759259

00:17:43.720 --> 00:17:44.940 the functional connectome.

NOTE Confidence: 0.9499983

00:17:46.760 --> 00:17:47.900 You can take this,

NOTE Confidence: 0.9411947

00:17:48.919 --> 00:17:50.280 data from the connectome, or

NOTE Confidence: 0.9411947

00:17:50.280 --> 00:17:50.859 we can,

NOTE Confidence: 0.96444255

00:17:51.880 --> 00:17:53.080 combine this with a machine

NOTE Confidence: 0.96444255

00:17:53.080 --> 00:17:54.794 learning approach. And the exciting

NOTE Confidence: 0.96444255

00:17:54.794 --> 00:17:55.835 thing about this is now

NOTE Confidence: 0.96444255

00:17:55.835 --> 00:17:57.375 we can start predicting clinical

NOTE Confidence: 0.96444255

00:17:57.434 --> 00:17:59.595 phenotypes or behaviors based on,

NOTE Confidence: 0.96444255

00:17:59.835 --> 00:18:01.375 brain connectivity patterns.

NOTE Confidence: 0.99500823

00:18:02.315 --> 00:18:03.514 We can plot this to,

NOTE Confidence: 0.99500823

00:18:03.914 --> 00:18:05.755 to assess performance for predicted

NOTE Confidence: 0.99500823

00:18:05.755 --> 00:18:06.414 and observed.

NOTE Confidence: 0.9566874

00:18:06.730 --> 00:18:07.690 We can take a step

NOTE Confidence: 0.9566874

00:18:07.690 --> 00:18:08.830 back and and,

NOTE Confidence: 0.9320764

00:18:09.529 --> 00:18:10.649 go from the node region

NOTE Confidence: 0.9320764

00:18:10.649 --> 00:18:12.350 to a large scale networks

NOTE Confidence: 0.9320764

00:18:12.409 --> 00:18:13.389 and start understanding,

NOTE Confidence: 0.88699037

00:18:15.690 --> 00:18:17.130 the within and between network,

NOTE Confidence: 0.88699037

00:18:17.369 --> 00:18:17.869 connectivity,

NOTE Confidence: 0.9739353

00:18:18.649 --> 00:18:19.289 of these,

NOTE Confidence: 0.9996786

00:18:19.609 --> 00:18:20.590 of these patterns.

NOTE Confidence: 0.98721176

00:18:23.494 --> 00:18:24.455 So one one,

NOTE Confidence: 0.93265563

00:18:25.255 --> 00:18:26.135 one area that,

NOTE Confidence: 0.9220127

00:18:27.494 --> 00:18:28.855 really launched us into this,

NOTE Confidence: 0.960769

00:18:29.494 --> 00:18:31.575 area of connectomas was, taking

NOTE Confidence: 0.960769

00:18:31.575 --> 00:18:33.115 this method and applying it,

NOTE Confidence: 0.97259927

00:18:33.575 --> 00:18:35.655 to predict aggression in, in

NOTE Confidence: 0.97259927

00:18:35.655 --> 00:18:37.190 a clinical sample of,

NOTE Confidence: 0.7212845

00:18:37.890 --> 00:18:38.390 children,

NOTE Confidence: 0.9707892

00:18:38.770 --> 00:18:40.390 with disruptive behavior disorders.

NOTE Confidence: 0.96345544

00:18:41.090 --> 00:18:42.289 So for this study, we

NOTE Confidence: 0.96345544

00:18:42.289 --> 00:18:43.490 had a hundred twenty nine,

NOTE Confidence: 0.96345544

00:18:43.809 --> 00:18:45.750 children with wide age range,

NOTE Confidence: 0.9174412

00:18:46.289 --> 00:18:47.750 up to, adolescents,

NOTE Confidence: 0.84800696

00:18:48.210 --> 00:18:49.409 and again using the same

NOTE Confidence: 0.84800696

00:18:49.409 --> 00:18:49.909 implicit,

NOTE Confidence: 0.7558979

00:18:50.369 --> 00:18:50.869 emotion,

NOTE Confidence: 0.96213466

00:18:52.055 --> 00:18:53.655 processing task. And here our

NOTE Confidence: 0.96213466

00:18:53.655 --> 00:18:55.115 question was, can we take,

NOTE Confidence: 0.9102236

00:18:55.494 --> 00:18:57.255 the functional connectome and can

NOTE Confidence: 0.9102236

00:18:57.335 --> 00:18:58.455 during task, and can we

NOTE Confidence: 0.9102236

00:18:58.455 --> 00:18:58.934 predict,

NOTE Confidence: 0.95306474

00:18:59.895 --> 00:19:01.575 our clinical phenotype of interest?

NOTE Confidence: 0.95306474

00:19:01.575 --> 00:19:02.455 In this case, it was

NOTE Confidence: 0.95306474

00:19:02.455 --> 00:19:03.515 aggression severity.

NOTE Confidence: 0.96441483

00:19:04.580 --> 00:19:05.460 And the answer to that

NOTE Confidence: 0.96441483

00:19:05.460 --> 00:19:06.820 was yes. We found that,

NOTE Confidence: 0.96441483

00:19:07.060 --> 00:19:08.200 just based on,

NOTE Confidence: 0.98992723

00:19:08.660 --> 00:19:10.500 brain connectivity patterns, we can

NOTE Confidence: 0.98992723

00:19:10.500 --> 00:19:10.980 predict,

NOTE Confidence: 0.99120027

00:19:11.380 --> 00:19:13.080 aggression severity with,

NOTE Confidence: 0.9444123

00:19:13.859 --> 00:19:14.520 a relatively,

NOTE Confidence: 0.97494096

00:19:15.460 --> 00:19:16.680 moderate effect size.

NOTE Confidence: 0.9026015

00:19:17.220 --> 00:19:17.380 And,

NOTE Confidence: 0.9815326

00:19:18.705 --> 00:19:20.085 if we start looking at,

NOTE Confidence: 0.97510785

00:19:20.865 --> 00:19:22.785 types of, nodes or regions

NOTE Confidence: 0.97510785

00:19:22.785 --> 00:19:24.705 that, may have played, a

NOTE Confidence: 0.97510785

00:19:24.705 --> 00:19:25.845 role in this predictive,

NOTE Confidence: 0.9606679

00:19:26.465 --> 00:19:28.065 model, we we again find

NOTE Confidence: 0.9606679

00:19:28.065 --> 00:19:29.924 this region of dorsolateral prefrontal

NOTE Confidence: 0.9606679

00:19:30.065 --> 00:19:31.205 cortex or DLPFC,

NOTE Confidence: 0.92075175

00:19:32.170 --> 00:19:33.930 but also VLPFC or ventral

NOTE Confidence: 0.92075175

00:19:33.930 --> 00:19:35.390 lateral prefrontal cortex.

NOTE Confidence: 0.97315675

00:19:36.090 --> 00:19:37.609 So it it's interesting that

NOTE Confidence: 0.97315675

00:19:37.609 --> 00:19:38.650 on the top panel, we're

NOTE Confidence: 0.97315675

00:19:38.650 --> 00:19:39.550 looking at,

NOTE Confidence: 0.79427207

00:19:40.170 --> 00:19:40.670 hyperconnectivity,

NOTE Confidence: 0.9226653

00:19:41.210 --> 00:19:42.030 so overconnectivity

NOTE Confidence: 0.97120774

00:19:42.650 --> 00:19:44.990 across regions that predicted aggression.

NOTE Confidence: 0.97120774

00:19:45.210 --> 00:19:46.490 On the bottom panel, we're

NOTE Confidence: 0.97120774

00:19:46.490 --> 00:19:48.325 looking at under connectivity that

NOTE Confidence: 0.97120774

00:19:48.325 --> 00:19:49.784 predicted aggression severity.

NOTE Confidence: 0.9797966

00:19:50.325 --> 00:19:51.684 So this model was largely

NOTE Confidence: 0.9797966

00:19:51.684 --> 00:19:54.265 driven by, over connectivity of,

NOTE Confidence: 0.9907324

00:19:54.725 --> 00:19:56.484 these lateral prefrontal nodes, but

NOTE Confidence: 0.9907324

00:19:56.484 --> 00:19:57.145 we did,

NOTE Confidence: 0.97055894

00:19:57.684 --> 00:19:59.044 we did see some prediction

NOTE Confidence: 0.97055894

00:19:59.044 --> 00:20:01.044 in, these temporal parietal regions

NOTE Confidence: 0.97055894

00:20:01.044 --> 00:20:02.565 as well, for the negative

NOTE Confidence: 0.97055894

00:20:02.565 --> 00:20:02.910 networks.

NOTE Confidence: 0.97630143

00:20:04.270 --> 00:20:05.650 So this is not for

NOTE Confidence: 0.97630143

00:20:05.869 --> 00:20:07.150 interpretation, but I I like

NOTE Confidence: 0.97630143

00:20:07.150 --> 00:20:08.590 showing this slide because it

NOTE Confidence: 0.97630143

00:20:08.670 --> 00:20:09.810 I I think it really

NOTE Confidence: 0.97630143

00:20:09.950 --> 00:20:11.250 emphasizes the interconnectedness

NOTE Confidence: 0.99736154

00:20:12.109 --> 00:20:13.250 of the human connectome.

NOTE Confidence: 0.9557323

00:20:14.030 --> 00:20:15.630 I would not ask someone

NOTE Confidence: 0.9557323

00:20:15.630 --> 00:20:17.085 to interpret this slide, but

NOTE Confidence: 0.9557323

00:20:17.164 --> 00:20:18.658 but you can see is

NOTE Confidence: 0.9557323

00:20:18.845 --> 00:20:20.205 definitely, as you look to

NOTE Confidence: 0.9557323

00:20:20.205 --> 00:20:21.565 the right of this slide,

NOTE Confidence: 0.9557323

00:20:21.565 --> 00:20:22.865 you can see that these

NOTE Confidence: 0.9557323

00:20:23.085 --> 00:20:24.605 extent of connections as we

NOTE Confidence: 0.9557323

00:20:24.605 --> 00:20:26.784 increase the threshold needed

NOTE Confidence: 0.9495924

00:20:27.085 --> 00:20:27.904 to be included,

NOTE Confidence: 0.99776405

00:20:28.365 --> 00:20:29.404 you can see that these

NOTE Confidence: 0.99776405

00:20:29.404 --> 00:20:31.645 prefrontal edges continue to survive

NOTE Confidence: 0.99776405

00:20:31.645 --> 00:20:33.440 at a very relatively high

NOTE Confidence: 0.99776405

00:20:33.440 --> 00:20:34.500 threshold. So,

NOTE Confidence: 0.9777277

00:20:34.880 --> 00:20:35.840 here, I I really just

NOTE Confidence: 0.9777277

00:20:35.840 --> 00:20:37.200 wanna emphasize that the human

NOTE Confidence: 0.9777277

00:20:37.200 --> 00:20:38.560 connectome is so vast and

NOTE Confidence: 0.9777277

00:20:38.560 --> 00:20:39.060 interconnected.

NOTE Confidence: 0.9023754

00:20:40.720 --> 00:20:42.020 I think we're really just

NOTE Confidence: 0.7873977

00:20:42.480 --> 00:20:43.540 starting to understand,

NOTE Confidence: 0.91484356

00:20:44.720 --> 00:20:45.760 much about a very,

NOTE Confidence: 0.99606705

00:20:46.240 --> 00:20:47.859 almost a Pandora's box.

NOTE Confidence: 0.9612276

00:20:49.175 --> 00:20:50.455 When we think about networks

NOTE Confidence: 0.9612276

00:20:50.455 --> 00:20:51.494 that play a role in

NOTE Confidence: 0.9612276

00:20:51.494 --> 00:20:52.715 predicting aggression,

NOTE Confidence: 0.9832306

00:20:53.895 --> 00:20:55.595 we really see this interconnected,

NOTE Confidence: 0.97546095

00:20:57.415 --> 00:20:58.775 network here, these features that

NOTE Confidence: 0.97546095

00:20:58.775 --> 00:21:00.375 are spanning several large scale

NOTE Confidence: 0.97546095

00:21:00.375 --> 00:21:00.840 networks

NOTE Confidence: 0.94820404

00:21:01.559 --> 00:21:03.799 across cognitive control, sensory motor,

NOTE Confidence: 0.94820404

00:21:03.799 --> 00:21:05.020 and emotion generative,

NOTE Confidence: 0.99150366

00:21:05.880 --> 00:21:06.380 networks.

NOTE Confidence: 0.968557

00:21:10.600 --> 00:21:11.480 The next thing we did

NOTE Confidence: 0.968557

00:21:11.480 --> 00:21:12.520 is, well, we we asked

NOTE Confidence: 0.968557

00:21:12.520 --> 00:21:13.400 if we can take this

NOTE Confidence: 0.968557

00:21:13.400 --> 00:21:14.679 model and can we predict

NOTE Confidence: 0.968557

00:21:14.679 --> 00:21:15.659 aggression in

NOTE Confidence: 0.94242173

00:21:16.135 --> 00:21:18.075 children with, co occurring,

NOTE Confidence: 0.9570146

00:21:18.775 --> 00:21:20.615 conditions that typically are comorbid

NOTE Confidence: 0.9570146

00:21:20.615 --> 00:21:21.115 with,

NOTE Confidence: 0.95855737

00:21:21.655 --> 00:21:23.255 disruptive behavior disorders. And we

NOTE Confidence: 0.95855737

00:21:23.255 --> 00:21:25.255 found even focusing on this,

NOTE Confidence: 0.95855737

00:21:25.575 --> 00:21:26.075 DLPFC

NOTE Confidence: 0.9884471

00:21:26.535 --> 00:21:27.674 network or node,

NOTE Confidence: 0.96855056

00:21:28.420 --> 00:21:29.780 we could still predict aggression

NOTE Confidence: 0.96855056

00:21:29.780 --> 00:21:31.640 in children with elevated internalizing

NOTE Confidence: 0.99404144

00:21:31.940 --> 00:21:32.440 symptoms,

NOTE Confidence: 0.996794

00:21:32.980 --> 00:21:33.480 ADHD,

NOTE Confidence: 0.976359

00:21:34.900 --> 00:21:36.760 elevated social impairment transdiagnostically

NOTE Confidence: 0.9322529

00:21:37.300 --> 00:21:38.500 as well as in a

NOTE Confidence: 0.9322529

00:21:38.500 --> 00:21:39.940 a relative a very small

NOTE Confidence: 0.9322529

00:21:39.940 --> 00:21:41.460 group of children with autism.

NOTE Confidence: 0.9322529

00:21:41.460 --> 00:21:42.760 So there's something very,

NOTE Confidence: 0.8571508

00:21:43.934 --> 00:21:44.914 this, DLPFC,

NOTE Confidence: 0.92750376

00:21:45.695 --> 00:21:47.215 node and edges connected to

NOTE Confidence: 0.92750376

00:21:47.215 --> 00:21:47.715 it,

NOTE Confidence: 0.9465952

00:21:48.575 --> 00:21:49.315 is really,

NOTE Confidence: 0.93596506

00:21:51.054 --> 00:21:52.355 emerge as a highly predictive

NOTE Confidence: 0.93596506

00:21:52.414 --> 00:21:55.315 feature in predicting aggression severity.

NOTE Confidence: 0.97017235

00:21:57.520 --> 00:21:58.560 So one of the the

NOTE Confidence: 0.97017235

00:21:58.560 --> 00:22:00.160 great aspects of these large

NOTE Confidence: 0.97017235

00:22:00.160 --> 00:22:01.920 data sets and consortia is

NOTE Confidence: 0.97017235

00:22:01.920 --> 00:22:03.280 they they provide a wealth

NOTE Confidence: 0.97017235

00:22:03.280 --> 00:22:04.640 of data that would be

NOTE Confidence: 0.97017235

00:22:04.640 --> 00:22:06.480 very difficult to collect across

NOTE Confidence: 0.97017235

00:22:06.480 --> 00:22:08.100 one's career as a neuroimager.

NOTE Confidence: 0.7949227

00:22:09.760 --> 00:22:10.260 One,

NOTE Confidence: 0.98850775

00:22:11.505 --> 00:22:13.105 one benefit of this is

NOTE Confidence: 0.98850775

00:22:13.105 --> 00:22:13.505 to,

NOTE Confidence: 0.9958201

00:22:13.984 --> 00:22:15.744 test replication of findings or

NOTE Confidence: 0.9958201

00:22:15.744 --> 00:22:17.125 generalization of findings,

NOTE Confidence: 0.99296737

00:22:17.744 --> 00:22:19.025 and and and,

NOTE Confidence: 0.8098431

00:22:19.345 --> 00:22:20.545 and pulling different,

NOTE Confidence: 0.9919526

00:22:21.105 --> 00:22:21.605 neuroimaging

NOTE Confidence: 0.99547607

00:22:22.065 --> 00:22:23.365 data across sites.

NOTE Confidence: 0.9227265

00:22:24.100 --> 00:22:25.480 And one study that,

NOTE Confidence: 0.97731346

00:22:26.259 --> 00:22:27.619 my lab, does a lot

NOTE Confidence: 0.97731346

00:22:27.619 --> 00:22:29.299 of work with is, the

NOTE Confidence: 0.97731346

00:22:29.299 --> 00:22:30.519 ABCD study.

NOTE Confidence: 0.9917066

00:22:30.980 --> 00:22:31.940 And this is a study

NOTE Confidence: 0.9917066

00:22:31.940 --> 00:22:33.320 across twenty one sites,

NOTE Confidence: 0.9958396

00:22:33.619 --> 00:22:34.519 in the US.

NOTE Confidence: 0.9826943

00:22:35.139 --> 00:22:36.419 Children were between the ages

NOTE Confidence: 0.9826943

00:22:36.419 --> 00:22:37.244 of nine to ten in

NOTE Confidence: 0.9826943

00:22:37.244 --> 00:22:38.385 the initial release,

NOTE Confidence: 0.927425

00:22:39.244 --> 00:22:40.765 and we're we're expecting really

NOTE Confidence: 0.927425

00:22:40.765 --> 00:22:41.645 six point o,

NOTE Confidence: 0.98650414

00:22:43.484 --> 00:22:45.265 any day now, I think.

NOTE Confidence: 0.98650414

00:22:45.484 --> 00:22:45.984 So,

NOTE Confidence: 0.93814594

00:22:46.525 --> 00:22:47.405 so this is a a

NOTE Confidence: 0.93814594

00:22:47.405 --> 00:22:48.145 great dataset,

NOTE Confidence: 0.99103117

00:22:48.685 --> 00:22:49.984 to work with for our,

NOTE Confidence: 0.9185024

00:22:51.049 --> 00:22:52.090 from my lab and our

NOTE Confidence: 0.9185024

00:22:52.090 --> 00:22:53.770 research because there's really a

NOTE Confidence: 0.9185024

00:22:53.770 --> 00:22:54.270 vast,

NOTE Confidence: 0.97381645

00:22:55.369 --> 00:22:57.790 detailed clinical phenotyping of children.

NOTE Confidence: 0.97381645

00:22:58.090 --> 00:22:59.369 Even though children are are

NOTE Confidence: 0.97381645

00:22:59.609 --> 00:23:00.809 it's more of a community

NOTE Confidence: 0.97381645

00:23:00.809 --> 00:23:01.630 based sample.

NOTE Confidence: 0.88803

00:23:02.330 --> 00:23:03.530 The the measures are quite

NOTE Confidence: 0.88803

00:23:03.530 --> 00:23:04.030 extensive,

NOTE Confidence: 0.9365255

00:23:04.665 --> 00:23:06.285 and the neuroimaging measures,

NOTE Confidence: 0.93562263

00:23:07.465 --> 00:23:09.165 are really, tapping into,

NOTE Confidence: 0.9703646

00:23:09.865 --> 00:23:12.365 constructs related to regulation, reward

NOTE Confidence: 0.9703646

00:23:12.425 --> 00:23:13.385 processing, and,

NOTE Confidence: 0.99041706

00:23:14.025 --> 00:23:15.785 and cognitive control more broadly.

NOTE Confidence: 0.99041706

00:23:15.785 --> 00:23:16.985 So this was really ideal

NOTE Confidence: 0.99041706

00:23:16.985 --> 00:23:17.725 for us.

NOTE Confidence: 0.9619427

00:23:18.169 --> 00:23:19.770 And we took two tasks

NOTE Confidence: 0.9619427

00:23:19.770 --> 00:23:21.369 that are related to, this

NOTE Confidence: 0.9619427

00:23:21.369 --> 00:23:23.289 implicit face processing task that

NOTE Confidence: 0.9619427

00:23:23.289 --> 00:23:24.270 we worked with,

NOTE Confidence: 0.9799359

00:23:24.650 --> 00:23:25.929 and the stop signal task

NOTE Confidence: 0.9799359

00:23:25.929 --> 00:23:27.130 in ABCD is a task

NOTE Confidence: 0.9799359

00:23:27.130 --> 00:23:27.869 of inhibition.

NOTE Confidence: 0.9841133

00:23:28.570 --> 00:23:29.369 And we found that we

NOTE Confidence: 0.9841133

00:23:29.369 --> 00:23:30.830 could replicate these findings,

NOTE Confidence: 0.9819408

00:23:31.465 --> 00:23:33.225 using this task fMRI from

NOTE Confidence: 0.9819408

00:23:33.225 --> 00:23:33.725 ABCD,

NOTE Confidence: 0.98135585

00:23:34.424 --> 00:23:35.865 using this task of inhibition

NOTE Confidence: 0.98135585

00:23:35.865 --> 00:23:37.144 where we found a similar

NOTE Confidence: 0.98135585

00:23:37.144 --> 00:23:37.644 pattern,

NOTE Confidence: 0.99073243

00:23:38.744 --> 00:23:40.524 of lateral prefrontal nodes,

NOTE Confidence: 0.94125265

00:23:40.904 --> 00:23:42.904 and core, cognitive control networks

NOTE Confidence: 0.94125265

00:23:42.904 --> 00:23:43.965 predicting aggression.

NOTE Confidence: 0.9603119

00:23:45.000 --> 00:23:46.280 Then we we can also

NOTE Confidence: 0.9603119

00:23:46.280 --> 00:23:47.960 replicate these findings using the,

NOTE Confidence: 0.9603119

00:23:48.280 --> 00:23:50.040 emotional and back task, which

NOTE Confidence: 0.9603119

00:23:50.040 --> 00:23:51.580 is using actually a similar,

NOTE Confidence: 0.9603119

00:23:51.800 --> 00:23:52.300 NIMSTIM,

NOTE Confidence: 0.9744772

00:23:53.720 --> 00:23:54.680 set as we have in

NOTE Confidence: 0.9744772

00:23:54.680 --> 00:23:56.119 our implicit task. But we

NOTE Confidence: 0.9744772

00:23:56.119 --> 00:23:58.115 can also replicate these findings

NOTE Confidence: 0.9744772

00:23:58.115 --> 00:23:59.475 and find a similar pattern

NOTE Confidence: 0.9744772

00:23:59.475 --> 00:24:01.335 as well with lateral PFC

NOTE Confidence: 0.9744772

00:24:01.395 --> 00:24:01.895 emerging.

NOTE Confidence: 0.97960526

00:24:03.475 --> 00:24:05.255 So this was very interesting

NOTE Confidence: 0.97960526

00:24:05.315 --> 00:24:06.835 because I I think one

NOTE Confidence: 0.97960526

00:24:06.835 --> 00:24:08.515 thing to place this into

NOTE Confidence: 0.97960526

00:24:08.515 --> 00:24:09.575 context is,

NOTE Confidence: 0.9862407

00:24:10.595 --> 00:24:11.095 traditional

NOTE Confidence: 0.9713221

00:24:11.869 --> 00:24:13.710 models of aggression have really

NOTE Confidence: 0.9713221

00:24:13.710 --> 00:24:15.150 focused on this triadic model

NOTE Confidence: 0.9713221

00:24:15.150 --> 00:24:16.210 and thinking about,

NOTE Confidence: 0.9382615

00:24:16.830 --> 00:24:19.010 over reactivity of emotion generative

NOTE Confidence: 0.9382615

00:24:19.070 --> 00:24:19.570 circuits,

NOTE Confidence: 0.75493115

00:24:20.030 --> 00:24:20.530 underactivity

NOTE Confidence: 0.9712186

00:24:20.990 --> 00:24:23.150 within prefrontal circuits that are,

NOTE Confidence: 0.9712186

00:24:23.390 --> 00:24:25.070 involved in cognitive control or

NOTE Confidence: 0.9712186

00:24:25.070 --> 00:24:25.970 emotion control

NOTE Confidence: 0.94105446

00:24:26.725 --> 00:24:28.565 and disruptions and connectivity among

NOTE Confidence: 0.94105446

00:24:28.565 --> 00:24:29.225 the two.

NOTE Confidence: 0.9654834

00:24:30.565 --> 00:24:32.484 And here, what we've based

NOTE Confidence: 0.9654834

00:24:32.484 --> 00:24:33.845 on our findings and and

NOTE Confidence: 0.9654834

00:24:33.845 --> 00:24:34.725 also current,

NOTE Confidence: 0.95256174

00:24:35.924 --> 00:24:37.205 and also recent work from

NOTE Confidence: 0.95256174

00:24:37.205 --> 00:24:38.804 other groups is really started

NOTE Confidence: 0.95256174

00:24:38.804 --> 00:24:39.845 to suggest more of a

NOTE Confidence: 0.95256174

00:24:39.845 --> 00:24:41.510 a broader network dysfunction. And

NOTE Confidence: 0.95256174

00:24:41.510 --> 00:24:42.070 this is really,

NOTE Confidence: 0.9714553

00:24:43.909 --> 00:24:44.630 you know, I I think

NOTE Confidence: 0.9714553

00:24:44.630 --> 00:24:46.309 something that, we've observed in

NOTE Confidence: 0.9714553

00:24:46.309 --> 00:24:47.369 our work that,

NOTE Confidence: 0.98744583

00:24:48.230 --> 00:24:49.990 in predicting aggression and, again,

NOTE Confidence: 0.98744583

00:24:49.990 --> 00:24:51.510 this is not necessarily unique

NOTE Confidence: 0.98744583

00:24:51.510 --> 00:24:52.010 to,

NOTE Confidence: 0.9623614

00:24:52.789 --> 00:24:55.034 maladaptive aggression or disruptive behavior

NOTE Confidence: 0.9623614

00:24:55.034 --> 00:24:55.934 problems, but,

NOTE Confidence: 0.9959942

00:24:56.394 --> 00:24:57.595 this is something that,

NOTE Confidence: 0.99092054

00:24:57.994 --> 00:24:59.215 in in our opinion,

NOTE Confidence: 0.96699876

00:25:00.075 --> 00:25:01.595 most likely involves a broader

NOTE Confidence: 0.96699876

00:25:01.595 --> 00:25:03.835 network dysfunction spanning large scale

NOTE Confidence: 0.96699876

00:25:03.835 --> 00:25:06.154 networks involving cognitive control, social

NOTE Confidence: 0.96699876

00:25:06.154 --> 00:25:07.774 functioning, and emotion generation.

NOTE Confidence: 0.9735931

00:25:08.850 --> 00:25:09.970 This is not an exhaustive

NOTE Confidence: 0.9735931

00:25:09.970 --> 00:25:11.330 list, but this is just,

NOTE Confidence: 0.9933765

00:25:12.530 --> 00:25:14.369 as as a theoretical basis

NOTE Confidence: 0.9933765

00:25:14.369 --> 00:25:15.590 to to think about,

NOTE Confidence: 0.9902624

00:25:16.050 --> 00:25:18.070 these larger scale networks and,

NOTE Confidence: 0.97692496

00:25:18.930 --> 00:25:20.450 really the the complexity of

NOTE Confidence: 0.97692496

00:25:20.450 --> 00:25:21.190 these interactions,

NOTE Confidence: 0.93001604

00:25:22.130 --> 00:25:23.510 in predicting this phenotype.

NOTE Confidence: 0.9925826

00:25:29.865 --> 00:25:30.825 So for the,

NOTE Confidence: 0.93370426

00:25:31.625 --> 00:25:32.825 for the second half and

NOTE Confidence: 0.93370426

00:25:32.825 --> 00:25:33.565 the the,

NOTE Confidence: 0.98465675

00:25:34.184 --> 00:25:35.145 this segment of the talk,

NOTE Confidence: 0.98465675

00:25:35.145 --> 00:25:36.105 I'd like to focus on

NOTE Confidence: 0.98465675

00:25:36.105 --> 00:25:36.845 some ongoing

NOTE Confidence: 0.9817486

00:25:37.304 --> 00:25:38.905 studies and some, some work

NOTE Confidence: 0.9817486

00:25:38.905 --> 00:25:39.945 that my lab has been

NOTE Confidence: 0.9817486

00:25:39.945 --> 00:25:40.820 focusing on

NOTE Confidence: 0.98423976

00:25:41.200 --> 00:25:42.880 and and, thinking about where

NOTE Confidence: 0.98423976

00:25:42.880 --> 00:25:44.480 where to take, all of

NOTE Confidence: 0.98423976

00:25:44.480 --> 00:25:45.220 this next.

NOTE Confidence: 0.9824794

00:25:48.000 --> 00:25:49.359 Everything that I've mentioned so

NOTE Confidence: 0.9824794

00:25:49.359 --> 00:25:50.639 far has really focused on

NOTE Confidence: 0.9824794

00:25:50.639 --> 00:25:52.179 understanding static connectivity,

NOTE Confidence: 0.9976902

00:25:53.105 --> 00:25:54.065 And that's where we can

NOTE Confidence: 0.9976902

00:25:54.065 --> 00:25:54.305 take,

NOTE Confidence: 0.9540724

00:25:55.265 --> 00:25:56.625 the bold time course across

NOTE Confidence: 0.9540724

00:25:56.625 --> 00:25:57.665 a scan or a run,

NOTE Confidence: 0.9540724

00:25:57.665 --> 00:25:59.105 and we can average the,

NOTE Confidence: 0.9540724

00:25:59.425 --> 00:25:59.925 brain,

NOTE Confidence: 0.75697637

00:26:01.505 --> 00:26:02.645 activation across

NOTE Confidence: 0.9781928

00:26:03.025 --> 00:26:04.085 this time course.

NOTE Confidence: 0.97139806

00:26:05.025 --> 00:26:05.984 And we can refer to

NOTE Confidence: 0.97139806

00:26:05.984 --> 00:26:07.205 this as static connectivity.

NOTE Confidence: 0.9777155

00:26:08.840 --> 00:26:10.380 But this might not necessarily

NOTE Confidence: 0.9777155

00:26:10.440 --> 00:26:11.640 be the entire picture. When

NOTE Confidence: 0.9777155

00:26:11.640 --> 00:26:12.460 you think about,

NOTE Confidence: 0.9620282

00:26:12.840 --> 00:26:14.359 a scan, sometimes the assumption

NOTE Confidence: 0.9620282

00:26:14.359 --> 00:26:15.880 is a participant is going

NOTE Confidence: 0.9620282

00:26:15.880 --> 00:26:17.580 to, remain in a particular

NOTE Confidence: 0.9620282

00:26:17.640 --> 00:26:19.100 brain state when they're viewing,

NOTE Confidence: 0.9714685

00:26:19.480 --> 00:26:21.320 faces or or completing a

NOTE Confidence: 0.9714685

00:26:21.320 --> 00:26:21.820 task.

NOTE Confidence: 0.988108

00:26:22.440 --> 00:26:24.195 But the reality is we

NOTE Confidence: 0.988108

00:26:24.195 --> 00:26:25.315 don't really know that, and

NOTE Confidence: 0.988108

00:26:25.315 --> 00:26:26.615 participants can actually,

NOTE Confidence: 0.986137

00:26:28.034 --> 00:26:28.994 jump in and out of

NOTE Confidence: 0.986137

00:26:28.994 --> 00:26:29.494 different,

NOTE Confidence: 0.9816968

00:26:29.955 --> 00:26:31.475 brain states throughout a scan.

NOTE Confidence: 0.9816968

00:26:31.475 --> 00:26:33.494 So the assumption that, there's

NOTE Confidence: 0.9816968

00:26:33.635 --> 00:26:34.455 one relatively

NOTE Confidence: 0.98144037

00:26:34.755 --> 00:26:36.595 stable brain state occurring throughout

NOTE Confidence: 0.98144037

00:26:36.595 --> 00:26:36.810 our

NOTE Confidence: 0.9713281

00:26:38.890 --> 00:26:39.290 our task or our run.

NOTE Confidence: 0.9713281

00:26:39.370 --> 00:26:40.570 It it might not be

NOTE Confidence: 0.9713281

00:26:40.570 --> 00:26:41.850 the give us the full

NOTE Confidence: 0.9713281

00:26:41.850 --> 00:26:43.770 picture. And, if you go

NOTE Confidence: 0.9713281

00:26:43.770 --> 00:26:45.130 back to, what I mentioned

NOTE Confidence: 0.9713281

00:26:45.130 --> 00:26:46.410 before from the connectome, we

NOTE Confidence: 0.9713281

00:26:46.410 --> 00:26:47.690 can derive so much rich

NOTE Confidence: 0.9713281

00:26:47.690 --> 00:26:49.370 information from this and analyze

NOTE Confidence: 0.9713281

00:26:49.370 --> 00:26:50.730 it in different ways and

NOTE Confidence: 0.9713281

00:26:50.730 --> 00:26:52.330 understand different aspects of the

NOTE Confidence: 0.9713281

00:26:52.330 --> 00:26:52.725 brain.

NOTE Confidence: 0.98846287

00:26:54.565 --> 00:26:56.984 So with, dynamic functional connectivity,

NOTE Confidence: 0.98846287

00:26:57.125 --> 00:26:58.405 the the exciting thing here

NOTE Confidence: 0.98846287

00:26:58.405 --> 00:26:59.924 is, we can take these

NOTE Confidence: 0.98846287

00:26:59.924 --> 00:27:00.424 functional,

NOTE Confidence: 0.9444362

00:27:01.445 --> 00:27:02.265 brain networks,

NOTE Confidence: 0.998906

00:27:02.965 --> 00:27:04.405 and we can think about

NOTE Confidence: 0.998906

00:27:04.405 --> 00:27:05.225 them as

NOTE Confidence: 0.86597425

00:27:06.290 --> 00:27:07.730 being derived and we can

NOTE Confidence: 0.86597425

00:27:07.730 --> 00:27:08.210 derive,

NOTE Confidence: 0.99710536

00:27:08.850 --> 00:27:10.630 specific latent brain states

NOTE Confidence: 0.9867723

00:27:11.090 --> 00:27:11.910 through these,

NOTE Confidence: 0.9888886

00:27:12.530 --> 00:27:14.369 from these functional networks. And

NOTE Confidence: 0.9888886

00:27:14.369 --> 00:27:15.810 the exciting thing with this

NOTE Confidence: 0.9888886

00:27:15.810 --> 00:27:16.930 approach is that we can

NOTE Confidence: 0.9888886

00:27:16.930 --> 00:27:17.830 start to understand,

NOTE Confidence: 0.94032913

00:27:18.609 --> 00:27:19.875 not just about the,

NOTE Confidence: 0.9892254

00:27:20.835 --> 00:27:23.315 disruptions within cognitive control networks

NOTE Confidence: 0.9892254

00:27:23.315 --> 00:27:24.215 or other networks,

NOTE Confidence: 0.91169184

00:27:25.475 --> 00:27:27.075 that's associated with the phenotype

NOTE Confidence: 0.91169184

00:27:27.075 --> 00:27:28.835 of interest, but the the

NOTE Confidence: 0.91169184

00:27:28.835 --> 00:27:30.375 more of a nuanced detail,

NOTE Confidence: 0.9770989

00:27:31.555 --> 00:27:33.450 in in this connectivity patterns

NOTE Confidence: 0.9770989

00:27:33.609 --> 00:27:34.730 as well. So here we're

NOTE Confidence: 0.9770989

00:27:34.730 --> 00:27:36.029 we're starting to understand,

NOTE Confidence: 0.95031786

00:27:36.649 --> 00:27:38.750 the transient properties of connectivity,

NOTE Confidence: 0.95031786

00:27:38.970 --> 00:27:39.529 the this,

NOTE Confidence: 0.9204662

00:27:40.250 --> 00:27:40.990 time varying,

NOTE Confidence: 0.96227604

00:27:41.609 --> 00:27:43.450 changes in connectivity moment to

NOTE Confidence: 0.96227604

00:27:43.450 --> 00:27:44.490 moment in the brain, which

NOTE Confidence: 0.96227604

00:27:44.490 --> 00:27:45.389 really is extraordinary,

NOTE Confidence: 0.99952203

00:27:46.490 --> 00:27:47.149 for me.

NOTE Confidence: 0.99002254

00:27:48.825 --> 00:27:50.425 And if we think about

NOTE Confidence: 0.99002254

00:27:50.425 --> 00:27:52.205 static connectivity, you have,

NOTE Confidence: 0.9589977

00:27:52.665 --> 00:27:53.865 the this is the the

NOTE Confidence: 0.9589977

00:27:53.865 --> 00:27:55.145 the arrows are showing you

NOTE Confidence: 0.9589977

00:27:55.145 --> 00:27:56.025 have a scan or a

NOTE Confidence: 0.9589977

00:27:56.025 --> 00:27:56.744 run length,

NOTE Confidence: 0.98759687

00:27:57.145 --> 00:27:57.645 and,

NOTE Confidence: 0.9582521

00:27:58.825 --> 00:28:01.225 the the, circles are, nodes

NOTE Confidence: 0.9582521

00:28:01.225 --> 00:28:03.050 or brain regions. And,

NOTE Confidence: 0.9775002

00:28:03.910 --> 00:28:05.110 across a scan, you might

NOTE Confidence: 0.9775002

00:28:05.110 --> 00:28:07.110 have a situation where, nodes

NOTE Confidence: 0.9775002

00:28:07.110 --> 00:28:08.390 a and b is correlated

NOTE Confidence: 0.9775002

00:28:08.390 --> 00:28:09.350 for some portion of the

NOTE Confidence: 0.9775002

00:28:09.350 --> 00:28:10.310 scan. And then in the

NOTE Confidence: 0.9775002

00:28:10.310 --> 00:28:11.830 middle panel, nodes b and

NOTE Confidence: 0.9775002

00:28:11.830 --> 00:28:13.110 c are correlated. And in

NOTE Confidence: 0.9775002

00:28:13.110 --> 00:28:13.610 the,

NOTE Confidence: 0.9903133

00:28:14.630 --> 00:28:15.910 the last panel, nodes a

NOTE Confidence: 0.9903133

00:28:15.910 --> 00:28:17.355 and c are correlated. And

NOTE Confidence: 0.9903133

00:28:17.355 --> 00:28:18.895 if that strength of correlation

NOTE Confidence: 0.9903133

00:28:18.955 --> 00:28:19.855 is strong enough,

NOTE Confidence: 0.9383919

00:28:20.155 --> 00:28:21.035 we can call that a

NOTE Confidence: 0.9383919

00:28:21.035 --> 00:28:22.475 network such as default mode

NOTE Confidence: 0.9383919

00:28:22.475 --> 00:28:23.135 or frontoparietal.

NOTE Confidence: 0.94320095

00:28:27.115 --> 00:28:28.475 Okay. There's animation to go

NOTE Confidence: 0.94320095

00:28:28.475 --> 00:28:29.310 with it. Okay.

NOTE Confidence: 0.9631283

00:28:31.070 --> 00:28:32.910 But another way of, thinking

NOTE Confidence: 0.9631283

00:28:32.910 --> 00:28:34.130 about this, if we,

NOTE Confidence: 0.98681206

00:28:34.910 --> 00:28:36.190 take the same data, but

NOTE Confidence: 0.98681206

00:28:36.190 --> 00:28:37.550 now we think about this

NOTE Confidence: 0.98681206

00:28:37.550 --> 00:28:38.930 in terms of brain states,

NOTE Confidence: 0.996477

00:28:39.390 --> 00:28:41.390 the correlation between nodes a

NOTE Confidence: 0.996477

00:28:41.390 --> 00:28:43.230 and b, we might derive

NOTE Confidence: 0.996477

00:28:43.230 --> 00:28:44.530 this as one state.

NOTE Confidence: 0.98676795

00:28:45.045 --> 00:28:46.725 The correlation between nodes b

NOTE Confidence: 0.98676795

00:28:46.725 --> 00:28:48.245 and c, this would be

NOTE Confidence: 0.98676795

00:28:48.245 --> 00:28:49.065 another state,

NOTE Confidence: 0.9978799

00:28:49.605 --> 00:28:51.365 and correlation with a and

NOTE Confidence: 0.9978799

00:28:51.365 --> 00:28:52.565 c would be a third

NOTE Confidence: 0.9978799

00:28:52.565 --> 00:28:53.065 state.

NOTE Confidence: 0.9451764

00:28:53.845 --> 00:28:54.345 And

NOTE Confidence: 0.9807884

00:28:54.885 --> 00:28:55.765 so in this case, we

NOTE Confidence: 0.9807884

00:28:55.765 --> 00:28:57.205 can take these brain states,

NOTE Confidence: 0.9807884

00:28:57.445 --> 00:28:58.965 these metrics of brain states

NOTE Confidence: 0.9807884

00:28:58.965 --> 00:28:59.705 and dynamics.

NOTE Confidence: 0.9583017

00:29:00.179 --> 00:29:01.220 We can map it onto

NOTE Confidence: 0.9583017

00:29:01.220 --> 00:29:02.980 behavior and symptom dimensions as

NOTE Confidence: 0.9583017

00:29:02.980 --> 00:29:03.480 well,

NOTE Confidence: 0.98769337

00:29:06.659 --> 00:29:07.700 just in case you didn't

NOTE Confidence: 0.98769337

00:29:07.700 --> 00:29:08.840 see it the first time.

NOTE Confidence: 0.98769337

00:29:08.899 --> 00:29:09.879 Okay. So

NOTE Confidence: 0.97027737

00:29:10.179 --> 00:29:10.899 what are some of the

NOTE Confidence: 0.97027737

00:29:10.899 --> 00:29:12.019 metrics we can derive? So

NOTE Confidence: 0.97027737

00:29:12.019 --> 00:29:13.139 time and state is a

NOTE Confidence: 0.97027737

00:29:13.139 --> 00:29:14.565 is a very common and

NOTE Confidence: 0.97027737

00:29:14.565 --> 00:29:15.845 useful metric to have. How

NOTE Confidence: 0.97027737

00:29:15.845 --> 00:29:17.205 long is a participant in

NOTE Confidence: 0.97027737

00:29:17.205 --> 00:29:18.965 a particular brain state? And,

NOTE Confidence: 0.97027737

00:29:18.965 --> 00:29:19.765 of course, there can be

NOTE Confidence: 0.97027737

00:29:19.765 --> 00:29:21.225 several brain states.

NOTE Confidence: 0.9833122

00:29:22.165 --> 00:29:23.285 We might refer to this

NOTE Confidence: 0.9833122

00:29:23.285 --> 00:29:24.745 as occupancy time,

NOTE Confidence: 0.94519454

00:29:25.725 --> 00:29:26.725 or the amount of time

NOTE Confidence: 0.94519454

00:29:26.725 --> 00:29:27.605 a participant is in a

NOTE Confidence: 0.94519454

00:29:27.605 --> 00:29:29.500 state before transitioning to another

NOTE Confidence: 0.94519454

00:29:29.500 --> 00:29:31.180 state. And this nuanced term

NOTE Confidence: 0.94519454

00:29:31.180 --> 00:29:32.940 we call, dwell time or

NOTE Confidence: 0.94519454

00:29:32.940 --> 00:29:33.440 sojourn,

NOTE Confidence: 0.9996656

00:29:34.140 --> 00:29:34.640 time.

NOTE Confidence: 0.91395736

00:29:35.100 --> 00:29:35.840 The second,

NOTE Confidence: 0.98758614

00:29:36.300 --> 00:29:37.680 metric that we can derive

NOTE Confidence: 0.98758614

00:29:37.740 --> 00:29:39.180 is related to the state

NOTE Confidence: 0.98758614

00:29:39.180 --> 00:29:41.100 transition probability. So what is

NOTE Confidence: 0.98758614

00:29:41.100 --> 00:29:43.205 the probability that a participant

NOTE Confidence: 0.98758614

00:29:43.265 --> 00:29:44.625 will switch in and out

NOTE Confidence: 0.98758614

00:29:44.625 --> 00:29:45.845 of, states,

NOTE Confidence: 0.93617976

00:29:47.184 --> 00:29:48.965 multiple times? And, of course,

NOTE Confidence: 0.97083026

00:29:49.585 --> 00:29:51.125 there could be multiple transitions,

NOTE Confidence: 0.97083026

00:29:51.265 --> 00:29:52.865 and participants can stay in

NOTE Confidence: 0.97083026

00:29:52.865 --> 00:29:53.585 these states,

NOTE Confidence: 0.8769223

00:29:54.065 --> 00:29:56.005 for varying time lengths.

NOTE Confidence: 0.9992853

00:29:56.840 --> 00:29:57.720 This is just a different

NOTE Confidence: 0.9992853

00:29:57.720 --> 00:29:59.000 way of depicting what I've

NOTE Confidence: 0.9992853

00:29:59.000 --> 00:29:59.980 shown you with,

NOTE Confidence: 0.9344129

00:30:00.280 --> 00:30:01.500 with the brain animation.

NOTE Confidence: 0.8575988

00:30:02.840 --> 00:30:03.640 But you can see the

NOTE Confidence: 0.8575988

00:30:03.640 --> 00:30:05.800 time course and, the different

NOTE Confidence: 0.8575988

00:30:05.800 --> 00:30:06.840 lengths of time that a

NOTE Confidence: 0.8575988

00:30:06.840 --> 00:30:06.928 participant might be in a

NOTE Confidence: 0.8575988

00:30:06.928 --> 00:30:07.035 particular state, and this and

NOTE Confidence: 0.8575988

00:30:07.035 --> 00:30:07.124 these states can be reoccurring

NOTE Confidence: 0.8575988

00:30:07.124 --> 00:30:08.140 at different time points.

NOTE Confidence: 0.9897832

00:30:10.135 --> 00:30:11.495 States can be reoccurring at

NOTE Confidence: 0.9897832

00:30:11.495 --> 00:30:12.935 different time points. So this

NOTE Confidence: 0.9897832

00:30:12.935 --> 00:30:14.375 is really fascinating way for

NOTE Confidence: 0.9897832

00:30:14.375 --> 00:30:15.415 me to think about the

NOTE Confidence: 0.9897832

00:30:15.415 --> 00:30:15.915 brain.

NOTE Confidence: 0.98658484

00:30:16.295 --> 00:30:17.575 There's different ways to derive

NOTE Confidence: 0.98658484

00:30:17.575 --> 00:30:18.535 these metrics. You can do

NOTE Confidence: 0.98658484

00:30:18.535 --> 00:30:19.915 a sliding window approach,

NOTE Confidence: 0.86723745

00:30:20.855 --> 00:30:22.640 and you can also use,

NOTE Confidence: 0.9300074

00:30:23.100 --> 00:30:24.940 different computational methods such as

NOTE Confidence: 0.9300074

00:30:24.940 --> 00:30:26.560 hidden semi mark off modeling

NOTE Confidence: 0.9300074

00:30:26.620 --> 00:30:28.160 also to derive these states.

NOTE Confidence: 0.9525693

00:30:30.780 --> 00:30:32.140 So here we we wanted

NOTE Confidence: 0.9525693

00:30:32.140 --> 00:30:33.440 to understand more about,

NOTE Confidence: 0.9083063

00:30:33.980 --> 00:30:35.500 what exactly is driving some

NOTE Confidence: 0.9083063

00:30:35.500 --> 00:30:36.975 of these disruptions in these,

NOTE Confidence: 0.9083063

00:30:37.455 --> 00:30:37.955 connectivity,

NOTE Confidence: 0.9064926

00:30:38.895 --> 00:30:41.235 and connectivity across these, cognitive

NOTE Confidence: 0.9064926

00:30:41.294 --> 00:30:42.575 controlled networks. So we went

NOTE Confidence: 0.9064926

00:30:42.575 --> 00:30:43.955 to the ABCD dataset.

NOTE Confidence: 0.93411624

00:30:44.815 --> 00:30:46.495 And and here we we,

NOTE Confidence: 0.93411624

00:30:46.815 --> 00:30:48.115 really work with a smaller,

NOTE Confidence: 0.9903655

00:30:48.735 --> 00:30:50.414 sample of children, from this

NOTE Confidence: 0.9903655

00:30:50.414 --> 00:30:51.930 dataset just because of the

NOTE Confidence: 0.9903655

00:30:52.010 --> 00:30:54.170 high computational demand and and

NOTE Confidence: 0.9903655

00:30:54.170 --> 00:30:54.990 cost of,

NOTE Confidence: 0.9784103

00:30:55.930 --> 00:30:58.110 not actual cost, but computational

NOTE Confidence: 0.9784103

00:30:58.330 --> 00:30:59.370 cost of this,

NOTE Confidence: 0.93831396

00:31:00.650 --> 00:31:02.570 approach. And, so the children

NOTE Confidence: 0.93831396

00:31:02.570 --> 00:31:03.770 were in the first wave

NOTE Confidence: 0.93831396

00:31:03.770 --> 00:31:05.210 of ABCD, so they were

NOTE Confidence: 0.93831396

00:31:05.210 --> 00:31:06.885 nine to ten. We had

NOTE Confidence: 0.92727804

00:31:07.345 --> 00:31:08.165 a relatively,

NOTE Confidence: 0.9241741

00:31:08.785 --> 00:31:10.565 well gender balanced sample.

NOTE Confidence: 0.97768897

00:31:11.265 --> 00:31:12.705 And here we're we're taking

NOTE Confidence: 0.97768897

00:31:12.705 --> 00:31:14.405 the similar measures from CBCL.

NOTE Confidence: 0.9655388

00:31:15.905 --> 00:31:17.025 And here we we also

NOTE Confidence: 0.9655388

00:31:17.025 --> 00:31:18.645 work with wrestling state fMRI

NOTE Confidence: 0.9655388

00:31:18.705 --> 00:31:19.205 data.

NOTE Confidence: 0.91465515

00:31:19.665 --> 00:31:20.965 We derive these

NOTE Confidence: 0.9733391

00:31:22.120 --> 00:31:23.720 networks using a data driven

NOTE Confidence: 0.9733391

00:31:23.720 --> 00:31:25.960 approach called, ICA or independent

NOTE Confidence: 0.9733391

00:31:25.960 --> 00:31:27.020 components analysis,

NOTE Confidence: 0.9614865

00:31:27.799 --> 00:31:29.340 which we then mapped onto,

NOTE Confidence: 0.8476386

00:31:29.720 --> 00:31:30.460 the yoparcylation.

NOTE Confidence: 0.97742754

00:31:31.960 --> 00:31:32.460 And,

NOTE Confidence: 0.95771426

00:31:33.799 --> 00:31:35.080 and and this is actually

NOTE Confidence: 0.95771426

00:31:35.080 --> 00:31:35.160 the,

NOTE Confidence: 0.99572706

00:31:36.085 --> 00:31:37.465 the independent components.

NOTE Confidence: 0.9491064

00:31:37.845 --> 00:31:38.885 So we have thirty three

NOTE Confidence: 0.9491064

00:31:38.885 --> 00:31:40.905 independent components, which mapped onto,

NOTE Confidence: 0.99966615

00:31:41.285 --> 00:31:42.325 ten of these large scale

NOTE Confidence: 0.99966615

00:31:42.325 --> 00:31:42.825 networks.

NOTE Confidence: 0.8730283

00:31:43.205 --> 00:31:44.325 Now I I placed this

NOTE Confidence: 0.8730283

00:31:44.325 --> 00:31:45.065 slide here,

NOTE Confidence: 0.99899995

00:31:47.125 --> 00:31:48.965 just to really spotlight the

NOTE Confidence: 0.99899995

00:31:48.965 --> 00:31:50.025 the fact that

NOTE Confidence: 0.9960187

00:31:50.700 --> 00:31:52.299 even at rest, we can

NOTE Confidence: 0.9960187

00:31:52.299 --> 00:31:54.960 still identify and derive these,

NOTE Confidence: 0.97670126

00:31:55.580 --> 00:31:57.260 large scale networks. We can

NOTE Confidence: 0.97670126

00:31:57.260 --> 00:31:58.240 derive a,

NOTE Confidence: 0.95587915

00:31:58.700 --> 00:32:01.020 visual network, sensory motor attention,

NOTE Confidence: 0.95587915

00:32:01.020 --> 00:32:01.520 etcetera.

NOTE Confidence: 0.98548526

00:32:02.140 --> 00:32:03.385 For me, that's a fascinating

NOTE Confidence: 0.98548526

00:32:03.385 --> 00:32:04.505 thing about the brain. Children

NOTE Confidence: 0.98548526

00:32:04.505 --> 00:32:05.465 are laying in a scanner.

NOTE Confidence: 0.98548526

00:32:05.465 --> 00:32:06.825 They're looking at a blank

NOTE Confidence: 0.98548526

00:32:06.825 --> 00:32:07.325 screen.

NOTE Confidence: 0.9872432

00:32:08.585 --> 00:32:10.605 You can decompose these signals,

NOTE Confidence: 0.9731708

00:32:11.385 --> 00:32:12.985 using ICA, and you can

NOTE Confidence: 0.9731708

00:32:12.985 --> 00:32:14.920 still find these networks. And

NOTE Confidence: 0.9731708

00:32:14.920 --> 00:32:16.460 it's really a truly remarkable

NOTE Confidence: 0.9731708

00:32:16.600 --> 00:32:17.880 facet about the brain that

NOTE Confidence: 0.9731708

00:32:17.880 --> 00:32:18.840 even at rest, you're no

NOTE Confidence: 0.9731708

00:32:18.840 --> 00:32:21.180 one's engaging these circuits necessarily

NOTE Confidence: 0.9731708

00:32:21.320 --> 00:32:22.600 through a task. We can

NOTE Confidence: 0.9731708

00:32:22.600 --> 00:32:23.820 still find these networks.

NOTE Confidence: 0.996019

00:32:26.440 --> 00:32:27.820 And when we take this,

NOTE Confidence: 0.95733255

00:32:28.795 --> 00:32:30.235 we we derive twelve brain

NOTE Confidence: 0.95733255

00:32:30.235 --> 00:32:32.175 states based on prior literature,

NOTE Confidence: 0.95733255

00:32:32.235 --> 00:32:33.455 and this was in collaboration

NOTE Confidence: 0.95733255

00:32:33.515 --> 00:32:35.195 with my colleague, Heather Chapelle

NOTE Confidence: 0.95733255

00:32:35.195 --> 00:32:36.415 at Wake Forest University.

NOTE Confidence: 0.95931816

00:32:36.875 --> 00:32:38.155 And the twelve state solution

NOTE Confidence: 0.95931816

00:32:38.155 --> 00:32:39.195 has been used in prior

NOTE Confidence: 0.95931816

00:32:39.195 --> 00:32:40.015 work, and,

NOTE Confidence: 0.9972591

00:32:40.795 --> 00:32:41.995 and we we wanted to

NOTE Confidence: 0.9972591

00:32:41.995 --> 00:32:42.975 keep this consistent.

NOTE Confidence: 0.9832491

00:32:43.900 --> 00:32:45.100 And what we found here

NOTE Confidence: 0.9832491

00:32:45.100 --> 00:32:46.940 was across these twelve, brain

NOTE Confidence: 0.9832491

00:32:46.940 --> 00:32:48.140 states that were derived, there

NOTE Confidence: 0.9832491

00:32:48.140 --> 00:32:49.900 was one state that was

NOTE Confidence: 0.9832491

00:32:49.900 --> 00:32:50.880 specific to,

NOTE Confidence: 0.92974377

00:32:52.620 --> 00:32:54.220 disruptive behavior problems. And this

NOTE Confidence: 0.92974377

00:32:54.220 --> 00:32:56.480 was after accounting for, internalizing

NOTE Confidence: 0.92974377

00:32:56.700 --> 00:32:58.160 an ADHD comorbidity,

NOTE Confidence: 0.9994092

00:32:58.545 --> 00:32:59.365 and that was

NOTE Confidence: 0.99659663

00:32:59.745 --> 00:33:01.125 state twelve. And

NOTE Confidence: 0.97137296

00:33:01.505 --> 00:33:03.125 state twelve showed that,

NOTE Confidence: 0.9886528

00:33:03.825 --> 00:33:04.785 and this is the the

NOTE Confidence: 0.9886528

00:33:04.785 --> 00:33:05.745 plot on the,

NOTE Confidence: 0.98193544

00:33:06.865 --> 00:33:07.745 the plot on the right

NOTE Confidence: 0.98193544

00:33:07.745 --> 00:33:09.505 is showing with increasing disruptive

NOTE Confidence: 0.98193544

00:33:09.505 --> 00:33:11.345 behavior severity, children are,

NOTE Confidence: 0.9884103

00:33:11.665 --> 00:33:13.345 showed greater occupancy time in

NOTE Confidence: 0.9884103

00:33:13.345 --> 00:33:14.250 state twelve.

NOTE Confidence: 0.9794731

00:33:14.870 --> 00:33:16.570 So, stated differently,

NOTE Confidence: 0.9709985

00:33:17.590 --> 00:33:19.990 children with, elevated disruptive behavior

NOTE Confidence: 0.9709985

00:33:19.990 --> 00:33:22.150 severity were basically getting stuck

NOTE Confidence: 0.9709985

00:33:22.150 --> 00:33:23.190 in this state. They were

NOTE Confidence: 0.9709985

00:33:23.190 --> 00:33:24.549 spending longer periods of time

NOTE Confidence: 0.9709985

00:33:24.549 --> 00:33:25.429 in this state. They weren't

NOTE Confidence: 0.9709985

00:33:25.429 --> 00:33:26.710 transitioning in and out of

NOTE Confidence: 0.9709985

00:33:26.710 --> 00:33:28.230 the state, as you would

NOTE Confidence: 0.9709985

00:33:28.230 --> 00:33:28.730 expect.

NOTE Confidence: 0.95879394

00:33:29.425 --> 00:33:31.185 And, well, what what's character

NOTE Confidence: 0.95879394

00:33:31.265 --> 00:33:31.765 what's

NOTE Confidence: 0.9690005

00:33:32.145 --> 00:33:33.685 special about state twelve?

NOTE Confidence: 0.96123534

00:33:34.145 --> 00:33:35.525 And we can we,

NOTE Confidence: 0.97413373

00:33:36.145 --> 00:33:37.905 to answer this, we compared

NOTE Confidence: 0.97413373

00:33:37.905 --> 00:33:39.265 state twelve to every single

NOTE Confidence: 0.97413373

00:33:39.265 --> 00:33:40.085 other state.

NOTE Confidence: 0.95365894

00:33:40.785 --> 00:33:41.285 And,

NOTE Confidence: 0.9827458

00:33:42.900 --> 00:33:44.500 basically, the red color on

NOTE Confidence: 0.9827458

00:33:44.500 --> 00:33:45.780 this color bar denotes,

NOTE Confidence: 0.9667639

00:33:46.180 --> 00:33:48.260 weaker positive connectivity. So state

NOTE Confidence: 0.9667639

00:33:48.260 --> 00:33:48.760 twelve

NOTE Confidence: 0.93808997

00:33:49.220 --> 00:33:50.180 is a state that we

NOTE Confidence: 0.93808997

00:33:50.180 --> 00:33:52.420 can conclude from this has

NOTE Confidence: 0.93808997

00:33:52.420 --> 00:33:54.260 glow is globally disconnected, but

NOTE Confidence: 0.93808997

00:33:54.260 --> 00:33:56.675 how it's disconnected, it's, shows,

NOTE Confidence: 0.9772278

00:33:57.155 --> 00:33:58.675 an overall pattern of hypo

NOTE Confidence: 0.9772278

00:33:58.675 --> 00:34:01.075 connectivity. So participants are spending

NOTE Confidence: 0.9772278

00:34:01.075 --> 00:34:02.935 longer in these underconnected states

NOTE Confidence: 0.970673

00:34:03.875 --> 00:34:04.855 or state twelve.

NOTE Confidence: 0.95099914

00:34:06.275 --> 00:34:06.525 So,

NOTE Confidence: 0.9707993

00:34:07.710 --> 00:34:08.930 this this was great.

NOTE Confidence: 0.99860936

00:34:09.710 --> 00:34:11.310 And our next question was,

NOTE Confidence: 0.99860936

00:34:11.550 --> 00:34:12.770 can we do this again?

NOTE Confidence: 0.97781533

00:34:13.310 --> 00:34:14.430 You always need a sequel.

NOTE Confidence: 0.97781533

00:34:14.430 --> 00:34:15.250 Right? So,

NOTE Confidence: 0.9888685

00:34:15.790 --> 00:34:17.489 so we we actually,

NOTE Confidence: 0.9445852

00:34:18.270 --> 00:34:20.190 took participants with four runs

NOTE Confidence: 0.9445852

00:34:20.190 --> 00:34:21.255 of resting states. So we

NOTE Confidence: 0.9445852

00:34:21.255 --> 00:34:22.694 had two runs, which we

NOTE Confidence: 0.9445852

00:34:22.694 --> 00:34:23.974 we used here as a

NOTE Confidence: 0.9445852

00:34:23.974 --> 00:34:24.954 discovery sample.

NOTE Confidence: 0.95102733

00:34:25.335 --> 00:34:26.375 We had a held out

NOTE Confidence: 0.95102733

00:34:26.375 --> 00:34:27.035 two runs,

NOTE Confidence: 0.9327332

00:34:27.654 --> 00:34:28.694 which we ask, and we

NOTE Confidence: 0.9327332

00:34:28.694 --> 00:34:30.135 replicate findings in these held

NOTE Confidence: 0.9327332

00:34:30.135 --> 00:34:31.255 out two runs for every

NOTE Confidence: 0.9327332

00:34:31.255 --> 00:34:32.535 participant, and we reran the

NOTE Confidence: 0.9327332

00:34:32.535 --> 00:34:33.914 entire analysis again.

NOTE Confidence: 0.8829464

00:34:35.339 --> 00:34:35.739 And,

NOTE Confidence: 0.9100283

00:34:36.140 --> 00:34:37.359 and we found the the

NOTE Confidence: 0.84331197

00:34:37.739 --> 00:34:39.119 highly similar pattern

NOTE Confidence: 0.8893217

00:34:39.500 --> 00:34:40.940 where, this time it was

NOTE Confidence: 0.8893217

00:34:40.940 --> 00:34:41.920 for two states,

NOTE Confidence: 0.9013209

00:34:42.700 --> 00:34:43.739 that that that mapped on

NOTE Confidence: 0.9013209

00:34:43.739 --> 00:34:45.180 to disruptive behavior problem, but

NOTE Confidence: 0.9013209

00:34:45.180 --> 00:34:46.380 it it was the, really

NOTE Confidence: 0.9013209

00:34:46.380 --> 00:34:47.359 the similar

NOTE Confidence: 0.87827563

00:34:48.405 --> 00:34:48.905 association.

NOTE Confidence: 0.9957744

00:34:50.165 --> 00:34:51.925 Longer time spent in these

NOTE Confidence: 0.9957744

00:34:51.925 --> 00:34:52.745 two states

NOTE Confidence: 0.9831334

00:34:53.045 --> 00:34:55.045 mapped onto greater disruptive behavior

NOTE Confidence: 0.9831334

00:34:55.045 --> 00:34:56.565 severity. So children getting stuck

NOTE Confidence: 0.9831334

00:34:56.565 --> 00:34:57.625 in certain states,

NOTE Confidence: 0.9916983

00:34:58.485 --> 00:35:00.344 is potentially linked to,

NOTE Confidence: 0.9923048

00:35:00.965 --> 00:35:03.480 increased severity of disruptive behavior

NOTE Confidence: 0.98719144

00:35:07.160 --> 00:35:08.680 problems. So I I wanna

NOTE Confidence: 0.98719144

00:35:08.680 --> 00:35:10.460 make a jump from dynamic

NOTE Confidence: 0.98719144

00:35:10.600 --> 00:35:11.640 networks, which,

NOTE Confidence: 0.9570414

00:35:12.119 --> 00:35:13.640 is really an exciting area.

NOTE Confidence: 0.9570414

00:35:13.640 --> 00:35:14.460 And and,

NOTE Confidence: 0.97454095

00:35:15.080 --> 00:35:16.060 I guess, how does

NOTE Confidence: 0.95729965

00:35:17.085 --> 00:35:18.205 this this is really something

NOTE Confidence: 0.95729965

00:35:18.205 --> 00:35:20.205 that adds, for me, nuance

NOTE Confidence: 0.95729965

00:35:20.205 --> 00:35:21.484 into understanding these,

NOTE Confidence: 0.92044854

00:35:21.965 --> 00:35:23.885 impairments in cognitive control networks

NOTE Confidence: 0.92044854

00:35:23.885 --> 00:35:25.265 and understanding that,

NOTE Confidence: 0.9127268

00:35:26.364 --> 00:35:26.864 these,

NOTE Confidence: 0.9251604

00:35:28.525 --> 00:35:30.685 alter connectivity patterns might be

NOTE Confidence: 0.9251604

00:35:30.685 --> 00:35:31.185 further

NOTE Confidence: 0.8725308

00:35:31.560 --> 00:35:32.060 characterized

NOTE Confidence: 0.92408013

00:35:32.440 --> 00:35:32.680 by,

NOTE Confidence: 0.9337233

00:35:34.360 --> 00:35:35.560 alterations in the time varying

NOTE Confidence: 0.9337233

00:35:35.560 --> 00:35:38.140 properties of state switching in

NOTE Confidence: 0.8441608

00:35:38.600 --> 00:35:39.100 participants.

NOTE Confidence: 0.95448726

00:35:39.800 --> 00:35:41.020 And it might be that

NOTE Confidence: 0.95448726

00:35:41.160 --> 00:35:42.440 one one way to interpret

NOTE Confidence: 0.95448726

00:35:42.440 --> 00:35:43.800 this in addition is, if

NOTE Confidence: 0.95448726

00:35:43.800 --> 00:35:45.560 children are spending longer states

NOTE Confidence: 0.95448726

00:35:45.560 --> 00:35:47.305 in longer time in states

NOTE Confidence: 0.95448726

00:35:47.305 --> 00:35:49.145 characterized by under connectivity or

NOTE Confidence: 0.95448726

00:35:49.145 --> 00:35:49.645 disconnectivity,

NOTE Confidence: 0.9130383

00:35:51.545 --> 00:35:52.045 then,

NOTE Confidence: 0.9655968

00:35:52.665 --> 00:35:53.864 that could also reflect,

NOTE Confidence: 0.851099

00:35:54.265 --> 00:35:55.245 reduced cognitive,

NOTE Confidence: 0.9918495

00:35:55.864 --> 00:35:58.105 flexibility or cognitive shifting across

NOTE Confidence: 0.9918495

00:35:58.105 --> 00:35:59.325 states, which is really,

NOTE Confidence: 0.9708693

00:36:00.585 --> 00:36:01.770 really a critical part to

NOTE Confidence: 0.9708693

00:36:01.770 --> 00:36:03.930 maintaining this cognitive flexibility that's

NOTE Confidence: 0.9708693

00:36:03.930 --> 00:36:04.430 also,

NOTE Confidence: 0.94120485

00:36:05.690 --> 00:36:08.030 linked to successful emotion regulation.

NOTE Confidence: 0.99528253

00:36:09.290 --> 00:36:09.790 And,

NOTE Confidence: 0.98312557

00:36:10.250 --> 00:36:11.770 so so this is one

NOTE Confidence: 0.98312557

00:36:11.770 --> 00:36:12.989 interpretation that,

NOTE Confidence: 0.9812263

00:36:13.610 --> 00:36:14.890 getting stuck in these certain,

NOTE Confidence: 0.9945012

00:36:15.525 --> 00:36:17.525 brain states might reflect reduced

NOTE Confidence: 0.9945012

00:36:17.525 --> 00:36:18.505 cognitive flexibility

NOTE Confidence: 0.9803212

00:36:18.885 --> 00:36:20.244 and time spent in other

NOTE Confidence: 0.9803212

00:36:20.244 --> 00:36:21.464 states that could,

NOTE Confidence: 0.96330976

00:36:22.005 --> 00:36:22.505 support,

NOTE Confidence: 0.99850243

00:36:23.125 --> 00:36:24.664 successful emotion regulation.

NOTE Confidence: 0.9914401

00:36:26.325 --> 00:36:27.204 So my lab,

NOTE Confidence: 0.9786723

00:36:27.525 --> 00:36:29.204 is a human neuroscience lab,

NOTE Confidence: 0.9786723

00:36:29.204 --> 00:36:29.944 and we,

NOTE Confidence: 0.98676056

00:36:32.140 --> 00:36:33.180 we we we have thought

NOTE Confidence: 0.98676056

00:36:33.180 --> 00:36:34.800 a lot about head motion

NOTE Confidence: 0.98676056

00:36:34.940 --> 00:36:35.440 in,

NOTE Confidence: 0.89216155

00:36:35.980 --> 00:36:37.040 in children. And,

NOTE Confidence: 0.98862517

00:36:38.780 --> 00:36:40.620 and do completing an MRI

NOTE Confidence: 0.98862517

00:36:40.620 --> 00:36:42.380 scan or fMRI scan is

NOTE Confidence: 0.98862517

00:36:42.380 --> 00:36:43.515 really not an easy thing

NOTE Confidence: 0.98862517

00:36:43.515 --> 00:36:45.275 for a child, most children

NOTE Confidence: 0.98862517

00:36:45.275 --> 00:36:46.015 or adults.

NOTE Confidence: 0.97385645

00:36:46.395 --> 00:36:46.895 It's,

NOTE Confidence: 0.9656215

00:36:47.594 --> 00:36:49.135 it's a very tightly enclosed,

NOTE Confidence: 0.96257055

00:36:49.594 --> 00:36:50.714 space as many of you

NOTE Confidence: 0.96257055

00:36:50.714 --> 00:36:51.694 may know. And,

NOTE Confidence: 0.9887836

00:36:52.474 --> 00:36:53.775 but at some point,

NOTE Confidence: 0.95327526

00:36:54.234 --> 00:36:55.114 you know, a a lot

NOTE Confidence: 0.95327526

00:36:55.114 --> 00:36:55.855 of my work

NOTE Confidence: 0.9949994

00:36:56.810 --> 00:36:58.410 with fMRI, we really started

NOTE Confidence: 0.9949994

00:36:58.410 --> 00:36:58.910 asking,

NOTE Confidence: 0.9694207

00:36:59.369 --> 00:37:00.730 well, who are whose data

NOTE Confidence: 0.9694207

00:37:00.730 --> 00:37:02.650 are we analyzing? And you

NOTE Confidence: 0.9694207

00:37:02.650 --> 00:37:03.609 have to you have to

NOTE Confidence: 0.9694207

00:37:03.609 --> 00:37:04.830 also appreciate that,

NOTE Confidence: 0.75173384

00:37:06.170 --> 00:37:06.670 the

NOTE Confidence: 0.9781959

00:37:07.050 --> 00:37:08.489 imaging data needs to have

NOTE Confidence: 0.9781959

00:37:08.489 --> 00:37:09.130 some type of,

NOTE Confidence: 0.95678747

00:37:09.690 --> 00:37:12.270 minimum quality control standards. So

NOTE Confidence: 0.9911701

00:37:13.315 --> 00:37:14.675 we wanted to understand more

NOTE Confidence: 0.9911701

00:37:14.675 --> 00:37:15.175 about,

NOTE Confidence: 0.9239647

00:37:15.795 --> 00:37:17.155 head motion and,

NOTE Confidence: 0.9548846

00:37:18.195 --> 00:37:19.875 whose data we're really analyzing

NOTE Confidence: 0.9548846

00:37:19.875 --> 00:37:21.155 when we who what data

NOTE Confidence: 0.9548846

00:37:21.155 --> 00:37:22.114 really makes it to this

NOTE Confidence: 0.9548846

00:37:22.114 --> 00:37:23.975 final stage, of analysis.

NOTE Confidence: 0.9722531

00:37:25.739 --> 00:37:27.020 And and this study was

NOTE Confidence: 0.9722531

00:37:27.020 --> 00:37:29.020 led by, several graduate students

NOTE Confidence: 0.9722531

00:37:29.020 --> 00:37:29.760 in my lab,

NOTE Confidence: 0.9085728

00:37:30.219 --> 00:37:32.620 Kavari, Zach, and, and Eleni

NOTE Confidence: 0.9085728

00:37:32.620 --> 00:37:34.380 who really did amazing work

NOTE Confidence: 0.9085728

00:37:34.380 --> 00:37:35.340 on this. This was an

NOTE Confidence: 0.9085728

00:37:35.340 --> 00:37:36.480 adventure project

NOTE Confidence: 0.9682927

00:37:37.315 --> 00:37:38.675 that two years later is

NOTE Confidence: 0.9682927

00:37:38.675 --> 00:37:39.555 is now impressed,

NOTE Confidence: 0.9982903

00:37:39.875 --> 00:37:40.855 and and everyone,

NOTE Confidence: 0.9032987

00:37:42.035 --> 00:37:43.315 you know, has has really

NOTE Confidence: 0.9032987

00:37:43.315 --> 00:37:44.675 put so much into this.

NOTE Confidence: 0.9052555

00:37:44.995 --> 00:37:46.435 And here we wanted to

NOTE Confidence: 0.9052555

00:37:46.435 --> 00:37:47.975 ask our transdiagnostic

NOTE Confidence: 0.9501136

00:37:48.435 --> 00:37:50.195 symptom domains linked to head

NOTE Confidence: 0.9501136

00:37:50.195 --> 00:37:51.150 motion in children. This is

NOTE Confidence: 0.9501136

00:37:51.150 --> 00:37:52.375 such a fundamental aspect

NOTE Confidence: 0.8940731

00:37:53.210 --> 00:37:54.750 of our work in in,

NOTE Confidence: 0.99786925

00:37:55.289 --> 00:37:57.690 developmental cognitive neuroscience. We took

NOTE Confidence: 0.99786925

00:37:57.690 --> 00:37:58.190 everything

NOTE Confidence: 0.9564471

00:37:58.650 --> 00:38:00.170 that ABCD study had to

NOTE Confidence: 0.9564471

00:38:00.170 --> 00:38:01.690 offer. We took functional, every

NOTE Confidence: 0.9564471

00:38:01.690 --> 00:38:02.509 single functional,

NOTE Confidence: 0.75659645

00:38:03.849 --> 00:38:05.289 mean motion and and,

NOTE Confidence: 0.8723384

00:38:05.609 --> 00:38:07.545 pass fail quality control data

NOTE Confidence: 0.8723384

00:38:07.545 --> 00:38:08.605 from every single

NOTE Confidence: 0.95505995

00:38:08.905 --> 00:38:11.145 functional scan, resting state task,

NOTE Confidence: 0.95505995

00:38:11.145 --> 00:38:11.645 diffusion,

NOTE Confidence: 0.92518926

00:38:13.305 --> 00:38:14.905 everything. E. Right? T one,

NOTE Confidence: 0.92518926

00:38:14.905 --> 00:38:16.204 t two weighted. And,

NOTE Confidence: 0.93771815

00:38:16.665 --> 00:38:17.785 and here we wanted to

NOTE Confidence: 0.93771815

00:38:17.785 --> 00:38:18.285 ask,

NOTE Confidence: 0.9699896

00:38:19.075 --> 00:38:19.575 does

NOTE Confidence: 0.7093751

00:38:20.230 --> 00:38:20.730 does,

NOTE Confidence: 0.91091746

00:38:21.670 --> 00:38:23.210 elevated symptom severity,

NOTE Confidence: 0.99944663

00:38:24.150 --> 00:38:25.530 how does that impact

NOTE Confidence: 0.9900819

00:38:26.310 --> 00:38:27.989 quality control pass and and

NOTE Confidence: 0.9900819

00:38:27.989 --> 00:38:29.370 motion during a scan?

NOTE Confidence: 0.9961173

00:38:29.989 --> 00:38:31.670 While other studies have looked

NOTE Confidence: 0.9961173

00:38:31.670 --> 00:38:32.325 at this,

NOTE Confidence: 0.9475232

00:38:33.285 --> 00:38:34.885 no this this was really

NOTE Confidence: 0.9475232

00:38:34.885 --> 00:38:35.844 the the first study to

NOTE Confidence: 0.9475232

00:38:35.844 --> 00:38:37.445 leverage this this size of

NOTE Confidence: 0.9475232

00:38:37.445 --> 00:38:38.645 of a dataset and and

NOTE Confidence: 0.9475232

00:38:38.645 --> 00:38:39.925 look at we we really

NOTE Confidence: 0.9475232

00:38:39.925 --> 00:38:40.885 wanted to take this in

NOTE Confidence: 0.9475232

00:38:40.885 --> 00:38:41.625 very nuanced,

NOTE Confidence: 0.90694064

00:38:42.484 --> 00:38:44.105 details and and our understanding.

NOTE Confidence: 0.9819571

00:38:45.450 --> 00:38:46.349 The the

NOTE Confidence: 0.9853965

00:38:46.890 --> 00:38:47.930 the bottom line from,

NOTE Confidence: 0.96810967

00:38:48.330 --> 00:38:49.450 some of our main findings

NOTE Confidence: 0.96810967

00:38:49.450 --> 00:38:50.650 here were higher severity of

NOTE Confidence: 0.96810967

00:38:50.650 --> 00:38:52.969 attention and disruptive behavior problems

NOTE Confidence: 0.96810967

00:38:52.969 --> 00:38:54.109 were linked with,

NOTE Confidence: 0.9854825

00:38:54.650 --> 00:38:56.330 increased head motion during scanning

NOTE Confidence: 0.9854825

00:38:56.330 --> 00:38:58.830 and increased likelihood of failing,

NOTE Confidence: 0.8919802

00:38:59.724 --> 00:39:01.025 quality control checks.

NOTE Confidence: 0.9558937

00:39:01.885 --> 00:39:03.244 But the the inverse for

NOTE Confidence: 0.9558937

00:39:03.244 --> 00:39:05.005 internalizing problem severity. So children

NOTE Confidence: 0.9558937

00:39:05.005 --> 00:39:06.844 who had elevated internalizing problems

NOTE Confidence: 0.9558937

00:39:06.844 --> 00:39:08.364 actually did better during scanning

NOTE Confidence: 0.9558937

00:39:08.364 --> 00:39:09.005 and had,

NOTE Confidence: 0.98086613

00:39:09.964 --> 00:39:11.484 lower motion and were more

NOTE Confidence: 0.98086613

00:39:11.484 --> 00:39:12.625 likely to pass

NOTE Confidence: 0.9410489

00:39:13.359 --> 00:39:14.640 quality control. And the plots

NOTE Confidence: 0.9410489

00:39:14.640 --> 00:39:16.160 here are just, for resting

NOTE Confidence: 0.9410489

00:39:16.160 --> 00:39:18.079 state just, for illustration of

NOTE Confidence: 0.9410489

00:39:18.079 --> 00:39:19.380 of some of these effects.

NOTE Confidence: 0.98230976

00:39:20.640 --> 00:39:21.140 And

NOTE Confidence: 0.9494037

00:39:21.839 --> 00:39:23.119 these are the the full

NOTE Confidence: 0.9494037

00:39:23.119 --> 00:39:24.719 extent of of the plots.

NOTE Confidence: 0.9494037

00:39:24.719 --> 00:39:26.160 But, it it just to

NOTE Confidence: 0.9494037

00:39:26.160 --> 00:39:27.359 give the the spotlight that

NOTE Confidence: 0.9494037

00:39:27.359 --> 00:39:28.480 we we really we looked

NOTE Confidence: 0.9494037

00:39:28.480 --> 00:39:30.905 across, modalities, and, there were

NOTE Confidence: 0.9494037

00:39:30.905 --> 00:39:32.665 some differences across each modality,

NOTE Confidence: 0.9494037

00:39:32.665 --> 00:39:33.485 but broadly,

NOTE Confidence: 0.9882826

00:39:33.864 --> 00:39:35.065 the the take home messages

NOTE Confidence: 0.9882826

00:39:35.065 --> 00:39:36.425 that I I presented here

NOTE Confidence: 0.9882826

00:39:36.425 --> 00:39:36.925 were,

NOTE Confidence: 0.9990104

00:39:37.465 --> 00:39:38.844 some of the main salient

NOTE Confidence: 0.9990104

00:39:38.905 --> 00:39:39.405 points.

NOTE Confidence: 0.99908876

00:39:40.025 --> 00:39:41.100 Why is this important?

NOTE Confidence: 0.9934162

00:39:41.739 --> 00:39:42.620 One is we know that

NOTE Confidence: 0.9934162

00:39:42.620 --> 00:39:44.480 motion can impact functional connectivity.

NOTE Confidence: 0.99774426

00:39:45.020 --> 00:39:46.060 There have been studies on

NOTE Confidence: 0.99774426

00:39:46.060 --> 00:39:46.560 this,

NOTE Confidence: 0.99616694

00:39:47.100 --> 00:39:48.380 that it can impact the

NOTE Confidence: 0.99616694

00:39:48.380 --> 00:39:49.520 the strength of connectivity.

NOTE Confidence: 0.98241544

00:39:50.860 --> 00:39:52.060 We know that motion can

NOTE Confidence: 0.98241544

00:39:52.060 --> 00:39:53.600 impact test retest reliability

NOTE Confidence: 0.9679213

00:39:53.980 --> 00:39:55.945 across networks that really are

NOTE Confidence: 0.9679213

00:39:55.945 --> 00:39:57.505 of interest for our group

NOTE Confidence: 0.9679213

00:39:57.505 --> 00:39:58.945 and many other groups, especially

NOTE Confidence: 0.9679213

00:39:58.945 --> 00:40:00.005 cognitive control.

NOTE Confidence: 0.9002716

00:40:01.665 --> 00:40:02.805 There's also genetic,

NOTE Confidence: 0.9881525

00:40:03.585 --> 00:40:05.185 heritable feature to motion, which

NOTE Confidence: 0.9881525

00:40:05.185 --> 00:40:06.305 is very interesting, and this

NOTE Confidence: 0.9881525

00:40:06.305 --> 00:40:07.525 comes from twin studies.

NOTE Confidence: 0.9985656

00:40:08.680 --> 00:40:09.739 Now the the

NOTE Confidence: 0.82997775

00:40:10.200 --> 00:40:10.700 really,

NOTE Confidence: 0.96766853

00:40:12.360 --> 00:40:13.640 I guess, the priority point

NOTE Confidence: 0.96766853

00:40:13.640 --> 00:40:14.140 here,

NOTE Confidence: 0.9685894

00:40:14.760 --> 00:40:15.880 for for my group is

NOTE Confidence: 0.9685894

00:40:15.880 --> 00:40:17.080 really thinking about we we

NOTE Confidence: 0.9685894

00:40:17.080 --> 00:40:18.360 do a lot of we

NOTE Confidence: 0.9685894

00:40:18.360 --> 00:40:20.060 we work with clinical populations,

NOTE Confidence: 0.973139

00:40:21.395 --> 00:40:22.194 and we know that there's

NOTE Confidence: 0.973139

00:40:22.194 --> 00:40:23.395 differences that in terms of

NOTE Confidence: 0.973139

00:40:23.395 --> 00:40:24.915 clinical populations tend to move

NOTE Confidence: 0.973139

00:40:24.915 --> 00:40:27.494 more than unaffected control populations.

NOTE Confidence: 0.9985712

00:40:28.114 --> 00:40:29.655 The problem with this is,

NOTE Confidence: 0.91032785

00:40:30.275 --> 00:40:32.035 there's the it's the idea

NOTE Confidence: 0.91032785

00:40:32.035 --> 00:40:33.520 and the, research has has

NOTE Confidence: 0.91032785

00:40:33.520 --> 00:40:34.500 shown that when

NOTE Confidence: 0.99114853

00:40:34.800 --> 00:40:36.900 we start selecting clinical subgroups

NOTE Confidence: 0.99114853

00:40:37.040 --> 00:40:38.880 with low motion, these clinical

NOTE Confidence: 0.99114853

00:40:38.880 --> 00:40:40.239 subgroups start to lose this

NOTE Confidence: 0.99114853

00:40:40.239 --> 00:40:40.739 heterogeneity

NOTE Confidence: 0.99570745

00:40:41.120 --> 00:40:41.920 that we want in our

NOTE Confidence: 0.99570745

00:40:41.920 --> 00:40:43.760 clinical samples. They tend to,

NOTE Confidence: 0.99570745

00:40:44.160 --> 00:40:45.140 be more phenotypically

NOTE Confidence: 0.99634045

00:40:45.440 --> 00:40:47.855 similar to controls, in terms

NOTE Confidence: 0.99634045

00:40:47.855 --> 00:40:49.155 of clinical severity.

NOTE Confidence: 0.9781924

00:40:50.175 --> 00:40:51.775 Younger children move more than

NOTE Confidence: 0.9781924

00:40:51.775 --> 00:40:53.614 older children, but, interestingly, there's

NOTE Confidence: 0.9781924

00:40:53.614 --> 00:40:54.915 actually inverse u,

NOTE Confidence: 0.95506257

00:40:55.614 --> 00:40:57.375 u shape association with motion.

NOTE Confidence: 0.95506257

00:40:57.375 --> 00:40:58.435 So younger children

NOTE Confidence: 0.9725989

00:40:58.920 --> 00:40:59.359 and,

NOTE Confidence: 0.87573326

00:40:59.800 --> 00:41:01.260 and into later adulthood,

NOTE Confidence: 0.98012

00:41:01.640 --> 00:41:03.239 these these two subgroups actually

NOTE Confidence: 0.98012

00:41:03.239 --> 00:41:03.980 show similar,

NOTE Confidence: 0.9990947

00:41:04.680 --> 00:41:05.579 motion effects.

NOTE Confidence: 0.99506736

00:41:06.119 --> 00:41:07.400 Males tend to move more

NOTE Confidence: 0.99506736

00:41:07.400 --> 00:41:08.520 than females, and we found

NOTE Confidence: 0.99506736

00:41:08.520 --> 00:41:09.719 that also in in in

NOTE Confidence: 0.99506736

00:41:09.719 --> 00:41:10.380 our research,

NOTE Confidence: 0.9990913

00:41:10.839 --> 00:41:12.140 on this motion study.

NOTE Confidence: 0.9673932

00:41:13.775 --> 00:41:14.975 And and there's some things

NOTE Confidence: 0.9673932

00:41:14.975 --> 00:41:15.935 that can be done to

NOTE Confidence: 0.9673932

00:41:15.935 --> 00:41:17.215 really make a scan easier.

NOTE Confidence: 0.9673932

00:41:17.215 --> 00:41:17.715 So,

NOTE Confidence: 0.8626856

00:41:18.015 --> 00:41:19.295 breaks helps, splitting up a

NOTE Confidence: 0.8626856

00:41:19.295 --> 00:41:20.415 session helps. So we found

NOTE Confidence: 0.8626856

00:41:20.415 --> 00:41:21.455 actually in a b c

NOTE Confidence: 0.8626856

00:41:21.455 --> 00:41:22.515 d, splitting,

NOTE Confidence: 0.92904973

00:41:22.895 --> 00:41:23.795 scan sessions,

NOTE Confidence: 0.9001129

00:41:24.975 --> 00:41:26.630 increased likelihood of success,

NOTE Confidence: 0.9823735

00:41:27.170 --> 00:41:28.769 and real time motion correction

NOTE Confidence: 0.9823735

00:41:28.769 --> 00:41:30.849 during resting state does does

NOTE Confidence: 0.9823735

00:41:30.849 --> 00:41:32.289 work. So I think a,

NOTE Confidence: 0.9823735

00:41:32.289 --> 00:41:33.089 b, c, d,

NOTE Confidence: 0.9423113

00:41:33.569 --> 00:41:34.690 PIs would be would be

NOTE Confidence: 0.9423113

00:41:34.690 --> 00:41:35.890 thrilled to know that, so

NOTE Confidence: 0.9423113

00:41:35.890 --> 00:41:37.269 we we confirmed that.

NOTE Confidence: 0.9796666

00:41:37.730 --> 00:41:39.009 So there's there's real time

NOTE Confidence: 0.9796666

00:41:39.009 --> 00:41:40.210 algorithms that you can use

NOTE Confidence: 0.9796666

00:41:40.210 --> 00:41:41.535 during your scan to correct

NOTE Confidence: 0.9796666

00:41:41.535 --> 00:41:42.515 for head motion.

NOTE Confidence: 0.9948468

00:41:46.094 --> 00:41:46.594 Okay.

NOTE Confidence: 0.97196364

00:41:49.295 --> 00:41:50.815 And I I guess thinking

NOTE Confidence: 0.97196364

00:41:50.815 --> 00:41:51.855 about and we so I

NOTE Confidence: 0.97196364

00:41:51.855 --> 00:41:52.815 I mentioned that my lab

NOTE Confidence: 0.97196364

00:41:52.815 --> 00:41:53.454 does a lot of work

NOTE Confidence: 0.97196364

00:41:53.454 --> 00:41:54.250 with a, b, c, d

NOTE Confidence: 0.97196364

00:41:54.250 --> 00:41:54.750 study.

NOTE Confidence: 0.93997985

00:41:55.050 --> 00:41:56.410 And another question we turn

NOTE Confidence: 0.93997985

00:41:56.410 --> 00:41:57.130 to a, b, c, d

NOTE Confidence: 0.93997985

00:41:57.130 --> 00:41:58.410 study to understand more about

NOTE Confidence: 0.93997985

00:41:58.410 --> 00:41:59.530 is is this link with

NOTE Confidence: 0.93997985

00:41:59.530 --> 00:42:01.870 emotion regulation. We understand transdiagnostic

NOTE Confidence: 0.9713981

00:42:02.330 --> 00:42:02.830 symptoms,

NOTE Confidence: 0.8472366

00:42:04.570 --> 00:42:06.270 can are are typically associated

NOTE Confidence: 0.8472366

00:42:06.330 --> 00:42:06.489 with impairments in regulation. This

NOTE Confidence: 0.8472366

00:42:06.489 --> 00:42:06.989 is,

NOTE Confidence: 0.7982951

00:42:11.555 --> 00:42:12.915 Zach and and Eleni in

NOTE Confidence: 0.7982951

00:42:12.915 --> 00:42:13.575 my lab.

NOTE Confidence: 0.9798569

00:42:14.035 --> 00:42:15.235 And this was really a

NOTE Confidence: 0.9798569

00:42:15.235 --> 00:42:16.995 fundamental question that that we

NOTE Confidence: 0.9798569

00:42:16.995 --> 00:42:18.455 addressed using the

NOTE Confidence: 0.9098949

00:42:18.995 --> 00:42:20.535 the entirety of the ABCD

NOTE Confidence: 0.9098949

00:42:20.594 --> 00:42:21.735 dataset and,

NOTE Confidence: 0.8428886

00:42:22.594 --> 00:42:23.094 really,

NOTE Confidence: 0.97689694

00:42:24.650 --> 00:42:25.870 understanding the distinct,

NOTE Confidence: 0.9997845

00:42:26.410 --> 00:42:27.630 and shared relationships

NOTE Confidence: 0.8898462

00:42:27.930 --> 00:42:28.410 with,

NOTE Confidence: 0.97774196

00:42:28.730 --> 00:42:31.470 emotion regulation difficulties that's associated

NOTE Confidence: 0.97774196

00:42:31.610 --> 00:42:33.930 with, increased severity across each

NOTE Confidence: 0.97774196

00:42:33.930 --> 00:42:34.910 symptom domain.

NOTE Confidence: 0.86338615

00:42:36.174 --> 00:42:36.674 And,

NOTE Confidence: 0.95864975

00:42:37.375 --> 00:42:38.255 and and Zach and the

NOTE Confidence: 0.95864975

00:42:38.255 --> 00:42:39.454 lady went on to unpack

NOTE Confidence: 0.95864975

00:42:39.454 --> 00:42:40.734 this further in terms of

NOTE Confidence: 0.95864975

00:42:40.734 --> 00:42:42.515 specific domains of

NOTE Confidence: 0.9630989

00:42:43.214 --> 00:42:44.835 regulation, and we found that

NOTE Confidence: 0.9630989

00:42:45.055 --> 00:42:47.135 increased levels of suppression, which

NOTE Confidence: 0.9630989

00:42:47.135 --> 00:42:48.255 I mentioned earlier, we can

NOTE Confidence: 0.9630989

00:42:48.255 --> 00:42:49.154 consider maladaptive

NOTE Confidence: 0.9898213

00:42:50.880 --> 00:42:51.380 strategy

NOTE Confidence: 0.9128849

00:42:51.760 --> 00:42:53.599 was linked to increased severity

NOTE Confidence: 0.9128849

00:42:53.599 --> 00:42:54.099 across,

NOTE Confidence: 0.99154717

00:42:54.400 --> 00:42:55.219 each of these,

NOTE Confidence: 0.8730757

00:42:55.680 --> 00:42:56.660 symptom domains.

NOTE Confidence: 0.97652316

00:42:57.359 --> 00:42:58.239 But we did not find

NOTE Confidence: 0.97652316

00:42:58.239 --> 00:42:59.380 an effect for reappraisal.

NOTE Confidence: 0.98478746

00:43:00.160 --> 00:43:01.760 So ABCD has been extremely

NOTE Confidence: 0.98478746

00:43:01.760 --> 00:43:02.719 valuable to take some of

NOTE Confidence: 0.98478746

00:43:02.719 --> 00:43:04.155 our hypotheses and test this

NOTE Confidence: 0.98478746

00:43:04.155 --> 00:43:05.295 in these large datasets,

NOTE Confidence: 0.946619

00:43:06.155 --> 00:43:07.775 and and provide the statistical

NOTE Confidence: 0.946619

00:43:07.835 --> 00:43:09.835 power that, would be sometimes

NOTE Confidence: 0.946619

00:43:09.835 --> 00:43:10.655 very difficult,

NOTE Confidence: 0.98453355

00:43:11.275 --> 00:43:12.094 and take

NOTE Confidence: 0.9984317

00:43:12.475 --> 00:43:13.455 years to collect.

NOTE Confidence: 0.9832817

00:43:14.315 --> 00:43:15.515 And I wanna wrap up

NOTE Confidence: 0.9832817

00:43:15.515 --> 00:43:16.015 with,

NOTE Confidence: 0.9490901

00:43:17.360 --> 00:43:19.060 work from really our flagship

NOTE Confidence: 0.9490901

00:43:19.120 --> 00:43:20.960 study in my lab. So,

NOTE Confidence: 0.9666598

00:43:22.160 --> 00:43:23.040 we call it the BRAIN

NOTE Confidence: 0.9666598

00:43:23.040 --> 00:43:24.400 study. It it stands for

NOTE Confidence: 0.9666598

00:43:24.400 --> 00:43:25.219 something here.

NOTE Confidence: 0.9184762

00:43:25.920 --> 00:43:27.200 I to save time, I'm

NOTE Confidence: 0.9184762

00:43:27.200 --> 00:43:28.320 gonna skip that, so just

NOTE Confidence: 0.9184762

00:43:28.320 --> 00:43:29.360 go with the acronym. But

NOTE Confidence: 0.9184762

00:43:29.360 --> 00:43:30.260 the BRAIN study,

NOTE Confidence: 0.97634

00:43:31.645 --> 00:43:33.165 the BRAIN study is is

NOTE Confidence: 0.97634

00:43:33.165 --> 00:43:34.305 really bringing together,

NOTE Confidence: 0.94780135

00:43:35.245 --> 00:43:35.965 a a lot of the

NOTE Confidence: 0.94780135

00:43:35.965 --> 00:43:37.085 the themes that I've covered

NOTE Confidence: 0.94780135

00:43:37.085 --> 00:43:38.364 in today's talk. So here

NOTE Confidence: 0.94780135

00:43:38.364 --> 00:43:39.485 we have a school age

NOTE Confidence: 0.94780135

00:43:39.485 --> 00:43:40.625 population of children,

NOTE Confidence: 0.95233166

00:43:41.245 --> 00:43:42.864 with varying levels of disruptive

NOTE Confidence: 0.95233166

00:43:42.925 --> 00:43:44.940 behavior with and without autism

NOTE Confidence: 0.95233166

00:43:44.940 --> 00:43:46.160 so we can tease apart,

NOTE Confidence: 0.9308757

00:43:46.700 --> 00:43:47.820 and understand more of this

NOTE Confidence: 0.9308757

00:43:47.820 --> 00:43:49.100 nuance detail with,

NOTE Confidence: 0.9943469

00:43:50.700 --> 00:43:52.140 networks that are unique to

NOTE Confidence: 0.9943469

00:43:52.140 --> 00:43:54.060 disruptive behavior, unique to social

NOTE Confidence: 0.9943469

00:43:54.060 --> 00:43:55.840 impairment, and that are overlapping

NOTE Confidence: 0.9943469

00:43:55.900 --> 00:43:56.960 across the two.

NOTE Confidence: 0.9495466

00:43:58.025 --> 00:44:00.265 We conduct multimodal imaging, functional

NOTE Confidence: 0.9495466

00:44:00.265 --> 00:44:01.405 and structural MRI,

NOTE Confidence: 0.9708612

00:44:01.864 --> 00:44:02.905 as well as the deep,

NOTE Confidence: 0.9708612

00:44:03.225 --> 00:44:05.165 clinical phenotyping as well.

NOTE Confidence: 0.9977068

00:44:05.625 --> 00:44:07.245 And our main task here

NOTE Confidence: 0.957482

00:44:07.545 --> 00:44:09.225 is really a task of

NOTE Confidence: 0.957482

00:44:09.225 --> 00:44:11.085 reappraisal that was developed here.

NOTE Confidence: 0.75604033

00:44:11.945 --> 00:44:12.445 And,

NOTE Confidence: 0.93950176

00:44:14.550 --> 00:44:15.670 and and and what we're

NOTE Confidence: 0.93950176

00:44:16.150 --> 00:44:17.110 this is actually a very

NOTE Confidence: 0.93950176

00:44:17.110 --> 00:44:19.110 common, task that's often used

NOTE Confidence: 0.93950176

00:44:19.110 --> 00:44:21.530 in in, neuroimaging research where,

NOTE Confidence: 0.9557985

00:44:22.390 --> 00:44:23.750 there's different conditions, and we're

NOTE Confidence: 0.9557985

00:44:23.750 --> 00:44:25.290 teaching children how to explicitly

NOTE Confidence: 0.9557985

00:44:25.350 --> 00:44:27.370 regulate emotion across different,

NOTE Confidence: 0.97128373

00:44:27.830 --> 00:44:29.325 conditions. So they're looking at

NOTE Confidence: 0.97128373

00:44:29.565 --> 00:44:31.484 disgust inducing images. They're asked

NOTE Confidence: 0.97128373

00:44:31.484 --> 00:44:31.984 to,

NOTE Confidence: 0.9890239

00:44:33.165 --> 00:44:34.445 look at neutral images, and

NOTE Confidence: 0.9890239

00:44:34.445 --> 00:44:35.484 then they're they're asked to

NOTE Confidence: 0.9890239

00:44:35.484 --> 00:44:37.005 look at the disgust inducing

NOTE Confidence: 0.9890239

00:44:37.005 --> 00:44:37.505 images

NOTE Confidence: 0.944262

00:44:37.805 --> 00:44:39.484 and down regulate their emotions

NOTE Confidence: 0.944262

00:44:39.484 --> 00:44:41.325 by pretending it's fake. And

NOTE Confidence: 0.944262

00:44:41.325 --> 00:44:42.765 this type of strategy we

NOTE Confidence: 0.944262

00:44:42.765 --> 00:44:43.744 call distancing.

NOTE Confidence: 0.7812443

00:44:44.700 --> 00:44:45.200 And,

NOTE Confidence: 0.98644924

00:44:46.380 --> 00:44:47.420 this is actually a very

NOTE Confidence: 0.98644924

00:44:47.420 --> 00:44:49.359 common approach with fMRI,

NOTE Confidence: 0.97287714

00:44:49.900 --> 00:44:52.480 studies using this specific reappraisal,

NOTE Confidence: 0.9722982

00:44:53.820 --> 00:44:55.280 strategy of distancing.

NOTE Confidence: 0.9537218

00:44:56.140 --> 00:44:56.925 So in this,

NOTE Confidence: 0.98852956

00:44:57.405 --> 00:44:59.085 you know, preliminary sample, we

NOTE Confidence: 0.98852956

00:44:59.085 --> 00:45:00.765 have twenty five children twenty

NOTE Confidence: 0.98852956

00:45:00.765 --> 00:45:02.045 seven children, excuse me, nine

NOTE Confidence: 0.98852956

00:45:02.045 --> 00:45:03.425 to twelve years of age.

NOTE Confidence: 0.9325674

00:45:05.325 --> 00:45:06.364 This is not a gender

NOTE Confidence: 0.9325674

00:45:06.364 --> 00:45:08.285 balanced sample. And and, and

NOTE Confidence: 0.9325674

00:45:08.285 --> 00:45:09.105 our recent

NOTE Confidence: 0.9122662

00:45:10.480 --> 00:45:12.480 recruitment actually is is focused

NOTE Confidence: 0.9122662

00:45:12.480 --> 00:45:12.880 on,

NOTE Confidence: 0.98947376

00:45:13.920 --> 00:45:15.280 on balancing this this gender

NOTE Confidence: 0.98947376

00:45:15.280 --> 00:45:16.500 imbalance in our sample.

NOTE Confidence: 0.9926976

00:45:16.800 --> 00:45:17.760 But I wanna share with

NOTE Confidence: 0.9926976

00:45:17.760 --> 00:45:18.800 you in in the next

NOTE Confidence: 0.9926976

00:45:18.800 --> 00:45:19.840 few minutes some of our

NOTE Confidence: 0.9926976

00:45:19.840 --> 00:45:21.860 preliminary data. I wanna spotlight,

NOTE Confidence: 0.9342385

00:45:22.239 --> 00:45:24.464 our our labs, PGA, Gladys,

NOTE Confidence: 0.9342385

00:45:24.464 --> 00:45:24.964 who,

NOTE Confidence: 0.98388714

00:45:25.505 --> 00:45:26.944 puts in an enormous effort

NOTE Confidence: 0.98388714

00:45:26.944 --> 00:45:27.444 to,

NOTE Confidence: 0.93362087

00:45:28.625 --> 00:45:30.005 recruit recruit children,

NOTE Confidence: 0.90140283

00:45:30.625 --> 00:45:32.164 con conduct the scans,

NOTE Confidence: 0.9970591

00:45:33.025 --> 00:45:33.525 and

NOTE Confidence: 0.88061655

00:45:33.904 --> 00:45:34.904 and and at regular,

NOTE Confidence: 0.98745

00:45:35.344 --> 00:45:36.885 time points and follow ups.

NOTE Confidence: 0.96873325

00:45:37.500 --> 00:45:38.460 And and given what I

NOTE Confidence: 0.96873325

00:45:38.460 --> 00:45:40.219 mentioned about considerations for head

NOTE Confidence: 0.96873325

00:45:40.219 --> 00:45:40.719 motion,

NOTE Confidence: 0.9809534

00:45:41.820 --> 00:45:42.940 Gladys has really led the

NOTE Confidence: 0.9809534

00:45:42.940 --> 00:45:44.380 way in thinking about this

NOTE Confidence: 0.9809534

00:45:44.380 --> 00:45:44.880 and,

NOTE Confidence: 0.99233717

00:45:45.260 --> 00:45:46.300 thinking about how to bring

NOTE Confidence: 0.99233717

00:45:46.300 --> 00:45:47.660 these skills to our in

NOTE Confidence: 0.99233717

00:45:47.660 --> 00:45:49.275 house data collection to make

NOTE Confidence: 0.99233717

00:45:49.355 --> 00:45:51.694 these experiences fun and, accessible

NOTE Confidence: 0.99233717

00:45:51.755 --> 00:45:52.414 for children.

NOTE Confidence: 0.9735744

00:45:53.674 --> 00:45:54.174 And,

NOTE Confidence: 0.9782434

00:45:54.635 --> 00:45:55.594 this is just to share

NOTE Confidence: 0.9782434

00:45:55.594 --> 00:45:56.094 some,

NOTE Confidence: 0.98324734

00:45:57.194 --> 00:45:58.234 some of our early data

NOTE Confidence: 0.98324734

00:45:58.234 --> 00:45:59.515 on this. But, so during

NOTE Confidence: 0.98324734

00:45:59.515 --> 00:46:00.395 the task, what we can

NOTE Confidence: 0.98324734

00:46:00.395 --> 00:46:01.434 see is children are looking

NOTE Confidence: 0.98324734

00:46:01.434 --> 00:46:02.094 at neutral,

NOTE Confidence: 0.96854234

00:46:03.060 --> 00:46:04.580 images. The the y axis

NOTE Confidence: 0.96854234

00:46:04.580 --> 00:46:06.180 throughout these next couple slides

NOTE Confidence: 0.96854234

00:46:06.180 --> 00:46:07.300 will be the affect rating,

NOTE Confidence: 0.96854234

00:46:07.300 --> 00:46:08.340 and it's on a Likert

NOTE Confidence: 0.96854234

00:46:08.340 --> 00:46:09.219 scale of one to five.

NOTE Confidence: 0.96854234

00:46:09.219 --> 00:46:10.840 But there's a significant difference

NOTE Confidence: 0.96854234

00:46:10.900 --> 00:46:12.820 even in this relatively this

NOTE Confidence: 0.96854234

00:46:12.820 --> 00:46:13.640 small sample,

NOTE Confidence: 0.9520302

00:46:14.260 --> 00:46:15.480 that we see an elevated

NOTE Confidence: 0.9520302

00:46:15.540 --> 00:46:16.040 affect,

NOTE Confidence: 0.96461844

00:46:16.645 --> 00:46:17.925 rating for look gross and

NOTE Confidence: 0.96461844

00:46:17.925 --> 00:46:18.885 a and a and a

NOTE Confidence: 0.96461844

00:46:18.885 --> 00:46:19.385 decrease,

NOTE Confidence: 0.89326054

00:46:19.685 --> 00:46:21.445 during the down regulate condition.

NOTE Confidence: 0.89326054

00:46:21.445 --> 00:46:21.945 So,

NOTE Confidence: 0.99144334

00:46:22.885 --> 00:46:24.005 this is really just showing

NOTE Confidence: 0.99144334

00:46:24.005 --> 00:46:25.605 that, we teach children how

NOTE Confidence: 0.99144334

00:46:25.605 --> 00:46:26.265 to reappraise,

NOTE Confidence: 0.97709745

00:46:27.205 --> 00:46:28.405 and this is in scanner

NOTE Confidence: 0.97709745

00:46:28.405 --> 00:46:29.925 data that's collected during the

NOTE Confidence: 0.97709745

00:46:29.925 --> 00:46:30.905 task that children,

NOTE Confidence: 0.9863776

00:46:32.989 --> 00:46:34.369 are most likely reappraising

NOTE Confidence: 0.92636967

00:46:34.670 --> 00:46:35.710 it in the scanner. And

NOTE Confidence: 0.92636967

00:46:35.710 --> 00:46:36.590 we do have a post

NOTE Confidence: 0.92636967

00:46:36.590 --> 00:46:37.090 scan,

NOTE Confidence: 0.98145014

00:46:37.550 --> 00:46:38.609 questionnaire also.

NOTE Confidence: 0.9822294

00:46:39.070 --> 00:46:40.190 Another way to think about

NOTE Confidence: 0.9822294

00:46:40.190 --> 00:46:41.070 this data is we can

NOTE Confidence: 0.9822294

00:46:41.070 --> 00:46:43.090 derive scores for emotion reactivity,

NOTE Confidence: 0.9534021

00:46:43.994 --> 00:46:45.914 and emotion regulation success. And

NOTE Confidence: 0.9534021

00:46:45.914 --> 00:46:47.055 if we look at this

NOTE Confidence: 0.9534021

00:46:47.194 --> 00:46:47.694 in

NOTE Confidence: 0.9149742

00:46:48.234 --> 00:46:49.914 a different way, we we

NOTE Confidence: 0.9149742

00:46:49.914 --> 00:46:51.454 can still see that children,

NOTE Confidence: 0.9823505

00:46:52.075 --> 00:46:54.154 in in this initial sample,

NOTE Confidence: 0.9823505

00:46:54.154 --> 00:46:56.394 this preliminary sample are, seem

NOTE Confidence: 0.9823505

00:46:56.394 --> 00:46:58.174 to be regulating and using

NOTE Confidence: 0.9823505

00:46:58.234 --> 00:46:58.734 reappraisal,

NOTE Confidence: 0.7930674

00:47:00.260 --> 00:47:01.239 to down regulate.

NOTE Confidence: 0.98962945

00:47:02.099 --> 00:47:03.640 So this work has been,

NOTE Confidence: 0.9374028

00:47:05.300 --> 00:47:06.339 you know, really,

NOTE Confidence: 0.89010787

00:47:07.060 --> 00:47:08.660 led by undergraduate student in

NOTE Confidence: 0.89010787

00:47:08.660 --> 00:47:09.780 my lab, Goen Li. This

NOTE Confidence: 0.89010787

00:47:09.780 --> 00:47:11.300 was part of her, senior

NOTE Confidence: 0.89010787

00:47:11.300 --> 00:47:12.580 thesis. What what a senior

NOTE Confidence: 0.89010787

00:47:12.580 --> 00:47:13.940 thesis was a lot it

NOTE Confidence: 0.89010787

00:47:13.940 --> 00:47:15.375 was a lot of data,

NOTE Confidence: 0.9938686

00:47:16.075 --> 00:47:17.114 that she analyzed in a

NOTE Confidence: 0.9938686

00:47:17.114 --> 00:47:18.475 very short amount of time.

NOTE Confidence: 0.9938686

00:47:18.475 --> 00:47:18.975 So,

NOTE Confidence: 0.9894836

00:47:21.275 --> 00:47:22.235 and one thing we can

NOTE Confidence: 0.9894836

00:47:22.235 --> 00:47:23.435 do is we can take

NOTE Confidence: 0.9894836

00:47:23.435 --> 00:47:25.455 this metric of regulation success,

NOTE Confidence: 0.97638637

00:47:26.555 --> 00:47:27.275 and we can test if

NOTE Confidence: 0.97638637

00:47:27.275 --> 00:47:29.130 this is associated with externalizing

NOTE Confidence: 0.97638637

00:47:29.130 --> 00:47:30.890 or disruptive behavior problems. And

NOTE Confidence: 0.97638637

00:47:30.890 --> 00:47:31.710 we see here

NOTE Confidence: 0.9074174

00:47:32.010 --> 00:47:33.849 actually and and, it's scaled

NOTE Confidence: 0.9074174

00:47:33.849 --> 00:47:35.210 differently here so that way

NOTE Confidence: 0.9074174

00:47:35.210 --> 00:47:37.469 larger numbers is better regulation

NOTE Confidence: 0.9074174

00:47:37.609 --> 00:47:38.910 success just for interpretation.

NOTE Confidence: 0.99438304

00:47:40.010 --> 00:47:41.369 Children who are better able

NOTE Confidence: 0.99438304

00:47:41.369 --> 00:47:43.205 to regulate during this task,

NOTE Confidence: 0.97276783

00:47:43.985 --> 00:47:44.485 show,

NOTE Confidence: 0.9569048

00:47:44.945 --> 00:47:46.785 lower levels of destructive behavior

NOTE Confidence: 0.9569048

00:47:46.785 --> 00:47:47.285 problems.

NOTE Confidence: 0.92795205

00:47:48.625 --> 00:47:49.525 And this is,

NOTE Confidence: 0.9905918

00:47:51.025 --> 00:47:52.545 interesting because it's even just

NOTE Confidence: 0.9905918

00:47:52.545 --> 00:47:53.505 in a small sample like

NOTE Confidence: 0.9905918

00:47:53.505 --> 00:47:54.800 this, we're still we're we're

NOTE Confidence: 0.9905918

00:47:54.800 --> 00:47:56.180 seeing some of these effects.

NOTE Confidence: 0.9846414

00:47:57.680 --> 00:47:59.780 Alice Dyer was, an undergraduate

NOTE Confidence: 0.9846414

00:48:00.000 --> 00:48:01.040 student in my lab who

NOTE Confidence: 0.9846414

00:48:01.040 --> 00:48:01.859 just graduated,

NOTE Confidence: 0.9389302

00:48:02.320 --> 00:48:03.540 one semester ago.

NOTE Confidence: 0.97154224

00:48:04.080 --> 00:48:05.840 And, this was Alice's thesis

NOTE Confidence: 0.97154224

00:48:05.840 --> 00:48:07.680 project, and and Alice looked

NOTE Confidence: 0.97154224

00:48:07.680 --> 00:48:10.614 at functional connectivity correlates of,

NOTE Confidence: 0.9883998

00:48:11.175 --> 00:48:12.535 regulation during this task and

NOTE Confidence: 0.9883998

00:48:12.535 --> 00:48:13.655 how this is linked to

NOTE Confidence: 0.9883998

00:48:13.655 --> 00:48:15.114 disruptive behavior. And,

NOTE Confidence: 0.99294776

00:48:15.655 --> 00:48:17.494 and here, Alice found that,

NOTE Confidence: 0.8558742

00:48:18.295 --> 00:48:19.675 we see reduced connectivity,

NOTE Confidence: 0.99247396

00:48:20.580 --> 00:48:21.780 between the amygdala and the

NOTE Confidence: 0.99247396

00:48:21.780 --> 00:48:24.200 lateral prefrontal cortex during regulation,

NOTE Confidence: 0.96771

00:48:25.219 --> 00:48:27.400 that's associated with, externalizing

NOTE Confidence: 0.9665917

00:48:27.780 --> 00:48:28.680 behavior. So,

NOTE Confidence: 0.9675509

00:48:29.060 --> 00:48:30.820 stated differently, children with,

NOTE Confidence: 0.96873474

00:48:31.860 --> 00:48:34.020 increasing level of disruptive behavior

NOTE Confidence: 0.96873474

00:48:34.020 --> 00:48:35.940 problems showed reduced connectivity in

NOTE Confidence: 0.96873474

00:48:35.940 --> 00:48:37.675 this cognitive control circuit,

NOTE Confidence: 0.9992179

00:48:38.114 --> 00:48:39.575 during explicit regulation.

NOTE Confidence: 0.8537452

00:48:41.795 --> 00:48:43.175 So this study,

NOTE Confidence: 0.9890928

00:48:43.475 --> 00:48:45.094 for me is, you know,

NOTE Confidence: 0.94986504

00:48:46.195 --> 00:48:47.715 exciting because well, for many

NOTE Confidence: 0.94986504

00:48:47.715 --> 00:48:49.335 reasons, but one, because

NOTE Confidence: 0.9660277

00:48:50.690 --> 00:48:51.969 the everything up until now

NOTE Confidence: 0.9660277

00:48:51.969 --> 00:48:53.250 I presented has been implicit

NOTE Confidence: 0.9660277

00:48:53.250 --> 00:48:54.150 emotion regulation.

NOTE Confidence: 0.98381346

00:48:55.010 --> 00:48:56.369 Here, we're we're testing an

NOTE Confidence: 0.98381346

00:48:56.369 --> 00:48:58.450 explicit task of regulation to

NOTE Confidence: 0.98381346

00:48:58.450 --> 00:48:58.950 really,

NOTE Confidence: 0.95917195

00:48:59.329 --> 00:49:00.849 to engage these networks involved

NOTE Confidence: 0.95917195

00:49:00.849 --> 00:49:02.230 in regulation and understand,

NOTE Confidence: 0.9534248

00:49:03.525 --> 00:49:05.065 this explicit link between,

NOTE Confidence: 0.9701284

00:49:06.885 --> 00:49:08.265 top down control of emotion

NOTE Confidence: 0.9701284

00:49:08.325 --> 00:49:10.165 and disruptive behavior problems in

NOTE Confidence: 0.9701284

00:49:10.165 --> 00:49:10.665 children.

NOTE Confidence: 0.96403635

00:49:13.444 --> 00:49:15.045 And this is of course,

NOTE Confidence: 0.96403635

00:49:15.045 --> 00:49:15.785 we we,

NOTE Confidence: 0.91096014

00:49:16.370 --> 00:49:17.110 are also,

NOTE Confidence: 0.9334768

00:49:17.730 --> 00:49:20.130 looking to understand this, in

NOTE Confidence: 0.9334768

00:49:20.130 --> 00:49:21.250 terms of resting state in

NOTE Confidence: 0.9334768

00:49:21.250 --> 00:49:22.450 a, b, c, d and,

NOTE Confidence: 0.91807705

00:49:22.850 --> 00:49:24.210 in our ongoing studies. This

NOTE Confidence: 0.91807705

00:49:24.210 --> 00:49:25.270 is led by Eleni,

NOTE Confidence: 0.96980554

00:49:25.890 --> 00:49:27.650 and the ABCD study has,

NOTE Confidence: 0.96980554

00:49:27.890 --> 00:49:29.570 Eleni has taken time one

NOTE Confidence: 0.96980554

00:49:29.570 --> 00:49:30.790 and time two points,

NOTE Confidence: 0.9338994

00:49:31.285 --> 00:49:32.245 for children in the a,

NOTE Confidence: 0.9338994

00:49:32.245 --> 00:49:32.965 b, c, d. And here

NOTE Confidence: 0.9338994

00:49:32.965 --> 00:49:34.325 we wanna understand about this

NOTE Confidence: 0.9338994

00:49:34.325 --> 00:49:34.825 longitudinal

NOTE Confidence: 0.9984782

00:49:35.125 --> 00:49:35.625 trajectories

NOTE Confidence: 0.99001986

00:49:35.925 --> 00:49:36.425 of,

NOTE Confidence: 0.99443966

00:49:37.125 --> 00:49:38.405 of symptom change and how

NOTE Confidence: 0.99443966

00:49:38.405 --> 00:49:39.685 this maps onto the connectome.

NOTE Confidence: 0.99443966

00:49:39.685 --> 00:49:40.565 So can we take the

NOTE Confidence: 0.99443966

00:49:40.565 --> 00:49:41.945 connectome? Can we predict

NOTE Confidence: 0.9911861

00:49:42.325 --> 00:49:43.385 change in severity,

NOTE Confidence: 0.91337866

00:49:44.165 --> 00:49:44.905 in behavior?

NOTE Confidence: 0.7491863

00:49:45.525 --> 00:49:45.685 And,

NOTE Confidence: 0.8775267

00:49:47.180 --> 00:49:49.100 and and this is,

NOTE Confidence: 0.9163148

00:49:49.820 --> 00:49:51.340 really excellent work, and it's

NOTE Confidence: 0.9163148

00:49:51.340 --> 00:49:52.220 showing that,

NOTE Confidence: 0.9871455

00:49:52.620 --> 00:49:53.820 so this is baseline. This

NOTE Confidence: 0.9871455

00:49:53.820 --> 00:49:54.300 is,

NOTE Confidence: 0.8562327

00:49:55.340 --> 00:49:57.760 some work from Eleni's, analysis

NOTE Confidence: 0.8562327

00:49:57.900 --> 00:49:58.400 showing,

NOTE Confidence: 0.9534493

00:49:58.940 --> 00:50:00.480 we can take baseline connectomes

NOTE Confidence: 0.9534493

00:50:00.620 --> 00:50:01.280 and predict,

NOTE Confidence: 0.9053588

00:50:02.664 --> 00:50:04.344 destructive behavior severity, and we

NOTE Confidence: 0.9053588

00:50:04.344 --> 00:50:05.385 can see a pattern of

NOTE Confidence: 0.9053588

00:50:05.385 --> 00:50:06.984 frontal parietal and other cognitive

NOTE Confidence: 0.9053588

00:50:06.984 --> 00:50:07.885 control networks,

NOTE Confidence: 0.98244137

00:50:08.424 --> 00:50:09.864 that are emerging as highly

NOTE Confidence: 0.98244137

00:50:09.864 --> 00:50:10.364 predictive.

NOTE Confidence: 0.99618083

00:50:11.864 --> 00:50:13.484 In terms of symptom change,

NOTE Confidence: 0.9981321

00:50:14.184 --> 00:50:15.625 we can still predict change

NOTE Confidence: 0.9981321

00:50:15.625 --> 00:50:17.250 in symptoms. So taking the

NOTE Confidence: 0.96365345

00:50:17.650 --> 00:50:19.810 baseline connectivity in participants, we

NOTE Confidence: 0.96365345

00:50:19.810 --> 00:50:20.469 can predict,

NOTE Confidence: 0.9633856

00:50:21.330 --> 00:50:22.850 children who are getting worse

NOTE Confidence: 0.9633856

00:50:22.850 --> 00:50:24.469 in terms of symptom severity

NOTE Confidence: 0.99427307

00:50:24.770 --> 00:50:25.670 across time.

NOTE Confidence: 0.9832648

00:50:26.290 --> 00:50:27.890 And even though we still

NOTE Confidence: 0.9832648

00:50:27.890 --> 00:50:29.190 see a pattern of cognitive

NOTE Confidence: 0.9832648

00:50:29.250 --> 00:50:30.795 control and and also sensory

NOTE Confidence: 0.9863322

00:50:31.175 --> 00:50:31.755 motor networks,

NOTE Confidence: 0.993964

00:50:32.295 --> 00:50:33.835 it's interesting that the pattern,

NOTE Confidence: 0.95466954

00:50:34.455 --> 00:50:35.535 the the key nodes are

NOTE Confidence: 0.95466954

00:50:35.535 --> 00:50:36.535 a bit shifted, so we

NOTE Confidence: 0.95466954

00:50:36.535 --> 00:50:37.655 can still predict. And it

NOTE Confidence: 0.95466954

00:50:37.655 --> 00:50:39.275 might be that different networks

NOTE Confidence: 0.95466954

00:50:39.335 --> 00:50:40.875 or subsets of nodes,

NOTE Confidence: 0.9576402

00:50:41.575 --> 00:50:42.695 are predictive of,

NOTE Confidence: 0.9872189

00:50:43.094 --> 00:50:45.500 cross sectional versus longitudinal trajectory.

NOTE Confidence: 0.9872189

00:50:45.560 --> 00:50:46.440 So this is something that

NOTE Confidence: 0.9872189

00:50:46.440 --> 00:50:47.420 we wanna understand,

NOTE Confidence: 0.97806025

00:50:48.120 --> 00:50:49.800 in in greater detail in

NOTE Confidence: 0.97806025

00:50:49.800 --> 00:50:50.360 MyLab's work.

NOTE Confidence: 0.8979438

00:50:53.080 --> 00:50:53.580 And

NOTE Confidence: 0.9313339

00:50:55.239 --> 00:50:56.600 and another area we've been,

NOTE Confidence: 0.95402396

00:50:57.000 --> 00:50:58.600 exploring, and this is also

NOTE Confidence: 0.95402396

00:50:58.600 --> 00:51:00.734 in collaboration with, my colleagues

NOTE Confidence: 0.95402396

00:51:00.734 --> 00:51:01.635 at at Haskins,

NOTE Confidence: 0.9554935

00:51:02.895 --> 00:51:04.815 Naveen, Ken, Vince, and and

NOTE Confidence: 0.9554935

00:51:04.815 --> 00:51:06.035 Gladys has and,

NOTE Confidence: 0.71729374

00:51:07.694 --> 00:51:08.515 I think Aslan,

NOTE Confidence: 0.9587346

00:51:09.135 --> 00:51:11.214 and Gladys has been, leading

NOTE Confidence: 0.9587346

00:51:11.214 --> 00:51:12.015 a lot of this effort

NOTE Confidence: 0.9587346

00:51:12.015 --> 00:51:13.214 with NEARS, but we wanna

NOTE Confidence: 0.9587346

00:51:13.214 --> 00:51:14.974 understand, can we take these

NOTE Confidence: 0.9587346

00:51:14.974 --> 00:51:16.260 markers from fMRI? Can we

NOTE Confidence: 0.9587346

00:51:16.260 --> 00:51:17.620 cross validate them in an

NOTE Confidence: 0.9587346

00:51:17.620 --> 00:51:19.380 approach that's cost efficient and

NOTE Confidence: 0.9587346

00:51:19.380 --> 00:51:21.219 has high translational potential to

NOTE Confidence: 0.9587346

00:51:21.219 --> 00:51:21.719 clinics?

NOTE Confidence: 0.89142656

00:51:22.500 --> 00:51:23.000 And,

NOTE Confidence: 0.97550464

00:51:24.420 --> 00:51:25.380 when we first started, I

NOTE Confidence: 0.97550464

00:51:25.380 --> 00:51:26.900 thought I thought participants were

NOTE Confidence: 0.97550464

00:51:26.900 --> 00:51:27.800 gonna love it.

NOTE Confidence: 0.9619723

00:51:29.325 --> 00:51:30.364 And they did not so

NOTE Confidence: 0.9619723

00:51:30.364 --> 00:51:31.805 the biggest complaint is the

NOTE Confidence: 0.9619723

00:51:31.805 --> 00:51:33.185 the pressure on the forehead.

NOTE Confidence: 0.9619723

00:51:33.245 --> 00:51:34.605 And I was shocked because

NOTE Confidence: 0.9619723

00:51:34.605 --> 00:51:35.505 the first two,

NOTE Confidence: 0.6853011

00:51:36.045 --> 00:51:36.945 NEAR scans,

NOTE Confidence: 0.98095065

00:51:37.565 --> 00:51:38.945 I and we have participants

NOTE Confidence: 0.98095065

00:51:39.005 --> 00:51:39.900 who did back to back

NOTE Confidence: 0.98095065

00:51:40.059 --> 00:51:41.339 back fMRI and NIRS. And

NOTE Confidence: 0.98095065

00:51:41.339 --> 00:51:42.239 when I asked

NOTE Confidence: 0.75071996

00:51:42.779 --> 00:51:43.440 our participants,

NOTE Confidence: 0.9796166

00:51:43.819 --> 00:51:44.619 so what did you think

NOTE Confidence: 0.9796166

00:51:44.619 --> 00:51:45.579 of NIRS? And they said,

NOTE Confidence: 0.9796166

00:51:45.579 --> 00:51:46.460 I still prefer,

NOTE Confidence: 0.9952767

00:51:46.940 --> 00:51:47.440 fMRI.

NOTE Confidence: 0.93374556

00:51:47.980 --> 00:51:48.480 So,

NOTE Confidence: 0.98063457

00:51:49.260 --> 00:51:50.059 but they do have an

NOTE Confidence: 0.98063457

00:51:50.059 --> 00:51:51.260 iPad that they're playing games

NOTE Confidence: 0.98063457

00:51:51.260 --> 00:51:52.160 with. So it's,

NOTE Confidence: 0.9443849

00:51:52.944 --> 00:51:54.305 but but, again, this is,

NOTE Confidence: 0.9443849

00:51:54.545 --> 00:51:55.744 really, I think, just a

NOTE Confidence: 0.9443849

00:51:55.744 --> 00:51:57.744 minor discomfort from, from the

NOTE Confidence: 0.9443849

00:51:57.744 --> 00:51:58.864 cap, but it's something to

NOTE Confidence: 0.9443849

00:51:58.864 --> 00:51:59.364 consider.

NOTE Confidence: 0.94759923

00:52:00.864 --> 00:52:01.905 Another area, and this is

NOTE Confidence: 0.94759923

00:52:01.905 --> 00:52:03.344 in in collaboration with with

NOTE Confidence: 0.94759923

00:52:03.344 --> 00:52:04.590 Kieran, is thinking about,

NOTE Confidence: 0.99749756

00:52:05.310 --> 00:52:06.850 combining what we know from,

NOTE Confidence: 0.99596345

00:52:07.469 --> 00:52:09.570 the functional connectome and epigenomics

NOTE Confidence: 0.9636342

00:52:09.870 --> 00:52:11.550 and understanding are there specific

NOTE Confidence: 0.9636342

00:52:11.550 --> 00:52:13.469 epigenetic markers that are linked

NOTE Confidence: 0.9636342

00:52:13.469 --> 00:52:15.250 with stress and emotion regulation

NOTE Confidence: 0.9636342

00:52:15.469 --> 00:52:16.290 that can help,

NOTE Confidence: 0.9978135

00:52:16.670 --> 00:52:18.270 help us understand more about

NOTE Confidence: 0.9978135

00:52:18.270 --> 00:52:18.670 these,

NOTE Confidence: 0.93633896

00:52:19.310 --> 00:52:20.555 these impacts of,

NOTE Confidence: 0.9931391

00:52:22.934 --> 00:52:24.635 across different levels of analysis.

NOTE Confidence: 0.986449

00:52:25.015 --> 00:52:26.135 And this is a pipeline

NOTE Confidence: 0.986449

00:52:26.135 --> 00:52:27.575 and workflow that we're developing

NOTE Confidence: 0.986449

00:52:27.575 --> 00:52:29.275 in collaboration and thinking about,

NOTE Confidence: 0.99568635

00:52:29.895 --> 00:52:31.835 different types of biospecimen collection.

NOTE Confidence: 0.9778331

00:52:33.330 --> 00:52:34.530 So, to wrap up in

NOTE Confidence: 0.9778331

00:52:34.530 --> 00:52:36.210 terms of clinical implications, where

NOTE Confidence: 0.9778331

00:52:36.210 --> 00:52:37.330 is this all going? So

NOTE Confidence: 0.9778331

00:52:37.330 --> 00:52:38.870 in there's many different

NOTE Confidence: 0.9935273

00:52:39.170 --> 00:52:40.690 aspects of thinking about,

NOTE Confidence: 0.9521517

00:52:41.810 --> 00:52:43.170 what are the implications in

NOTE Confidence: 0.9521517

00:52:43.170 --> 00:52:43.570 terms of,

NOTE Confidence: 0.93240625

00:52:45.585 --> 00:52:47.905 developing brain based biomarkers and

NOTE Confidence: 0.93240625

00:52:47.905 --> 00:52:49.505 and neural markers to inform

NOTE Confidence: 0.93240625

00:52:49.505 --> 00:52:50.005 treatment.

NOTE Confidence: 0.9739372

00:52:50.385 --> 00:52:51.424 For my lab's work, it's

NOTE Confidence: 0.9739372

00:52:51.585 --> 00:52:52.545 I I see this as

NOTE Confidence: 0.9739372

00:52:52.545 --> 00:52:53.585 two areas that are very

NOTE Confidence: 0.9739372

00:52:53.585 --> 00:52:54.545 relevant for what we do.

NOTE Confidence: 0.9739372

00:52:54.545 --> 00:52:56.325 One is informing treatment decisions.

NOTE Confidence: 0.9783236

00:52:57.170 --> 00:52:58.210 And this is also based

NOTE Confidence: 0.9783236

00:52:58.210 --> 00:52:59.650 on some of, my own

NOTE Confidence: 0.9783236

00:52:59.650 --> 00:53:00.690 clinical work. And can we

NOTE Confidence: 0.9783236

00:53:00.690 --> 00:53:01.890 take some of that guesswork

NOTE Confidence: 0.9783236

00:53:01.890 --> 00:53:03.410 out of these clinical decisions?

NOTE Confidence: 0.9783236

00:53:03.410 --> 00:53:04.230 Can we help,

NOTE Confidence: 0.9837129

00:53:05.410 --> 00:53:07.170 inform this decision of of,

NOTE Confidence: 0.9837129

00:53:07.410 --> 00:53:09.110 children who might do,

NOTE Confidence: 0.96514165

00:53:10.575 --> 00:53:11.935 respond best to a cognitive

NOTE Confidence: 0.96514165

00:53:11.935 --> 00:53:14.495 behavioral intervention, psychotropic medication, or

NOTE Confidence: 0.96514165

00:53:14.495 --> 00:53:16.035 a combination of the two.

NOTE Confidence: 0.9384749

00:53:17.295 --> 00:53:18.895 The second area that I

NOTE Confidence: 0.9384749

00:53:18.895 --> 00:53:19.795 see as a potential,

NOTE Confidence: 0.98411816

00:53:20.175 --> 00:53:22.114 relevance here is target engagement.

NOTE Confidence: 0.98411816

00:53:22.175 --> 00:53:23.375 Can we, can we use

NOTE Confidence: 0.98411816

00:53:23.375 --> 00:53:25.350 these validated neural markers to,

NOTE Confidence: 0.9243883

00:53:27.510 --> 00:53:29.050 to understand is the treatment,

NOTE Confidence: 0.95555794

00:53:29.510 --> 00:53:31.850 engaging and enhancing the, circuitry

NOTE Confidence: 0.95555794

00:53:31.910 --> 00:53:32.650 of interest?

NOTE Confidence: 0.9906053

00:53:32.950 --> 00:53:33.989 And if it's not, this

NOTE Confidence: 0.9906053

00:53:33.989 --> 00:53:34.650 could also,

NOTE Confidence: 0.980187

00:53:35.190 --> 00:53:35.930 give clinicians,

NOTE Confidence: 0.9875524

00:53:37.350 --> 00:53:39.204 several points along this treatment

NOTE Confidence: 0.9875524

00:53:39.204 --> 00:53:40.645 timeline where they can shift

NOTE Confidence: 0.9875524

00:53:40.645 --> 00:53:42.265 treatment or modify the treatment.

NOTE Confidence: 0.98326355

00:53:42.805 --> 00:53:44.244 This is just to show

NOTE Confidence: 0.98326355

00:53:44.244 --> 00:53:45.364 some of my work on,

NOTE Confidence: 0.98326355

00:53:45.605 --> 00:53:46.105 look,

NOTE Confidence: 0.94550365

00:53:47.444 --> 00:53:49.125 understanding the neural changes to

NOTE Confidence: 0.94550365

00:53:49.125 --> 00:53:50.565 treatment. But the idea here

NOTE Confidence: 0.94550365

00:53:50.565 --> 00:53:50.724 is,

NOTE Confidence: 0.9801857

00:53:52.050 --> 00:53:53.410 can we understand more about

NOTE Confidence: 0.9801857

00:53:53.410 --> 00:53:55.010 and take the guesswork out

NOTE Confidence: 0.9801857

00:53:55.010 --> 00:53:56.130 of who's going to respond

NOTE Confidence: 0.9801857

00:53:56.130 --> 00:53:57.590 best to a particular treatment?

NOTE Confidence: 0.97831184

00:53:59.090 --> 00:54:00.530 So I'll I'll end with

NOTE Confidence: 0.97831184

00:54:00.530 --> 00:54:01.890 this slide, and this is,

NOTE Confidence: 0.97525364

00:54:02.850 --> 00:54:04.130 you know, just thinking about

NOTE Confidence: 0.97525364

00:54:04.130 --> 00:54:05.730 how to really personalize our

NOTE Confidence: 0.97525364

00:54:05.730 --> 00:54:07.427 treatment approach. Is how can

NOTE Confidence: 0.97525364

00:54:07.427 --> 00:54:09.032 we take this information from,

NOTE Confidence: 0.97525364

00:54:09.353 --> 00:54:10.958 from the scanner, from neuroscience,

NOTE Confidence: 0.97525364

00:54:10.958 --> 00:54:13.204 and, and and, and and

NOTE Confidence: 0.97525364

00:54:13.204 --> 00:54:14.808 inform clinical decisions. This is

NOTE Confidence: 0.97525364

00:54:14.808 --> 00:54:16.413 really an important part of

NOTE Confidence: 0.97525364

00:54:16.413 --> 00:54:18.339 what we do. This was

NOTE Confidence: 0.97525364

00:54:18.339 --> 00:54:20.020 a participant who,

NOTE Confidence: 0.9870354

00:54:20.420 --> 00:54:22.200 developed her own way of,

NOTE Confidence: 0.8550422

00:54:23.380 --> 00:54:25.799 of communicating emotion regulation and

NOTE Confidence: 0.8550422

00:54:25.940 --> 00:54:27.239 feelings charts, thermometers.

NOTE Confidence: 0.96565294

00:54:28.339 --> 00:54:29.859 Those were really of, no

NOTE Confidence: 0.96565294

00:54:29.859 --> 00:54:31.815 interest to her. So she

NOTE Confidence: 0.96565294

00:54:31.815 --> 00:54:32.855 came up with her own

NOTE Confidence: 0.96565294

00:54:32.855 --> 00:54:33.575 way of,

NOTE Confidence: 0.9953162

00:54:34.055 --> 00:54:35.594 thinking about emotion regulation,

NOTE Confidence: 0.9887215

00:54:36.375 --> 00:54:37.815 as characters from a band.

NOTE Confidence: 0.9887215

00:54:37.815 --> 00:54:38.614 I won't say who the

NOTE Confidence: 0.9887215

00:54:38.614 --> 00:54:39.335 band is, but I put

NOTE Confidence: 0.9887215

00:54:39.335 --> 00:54:40.375 a hint on the slide

NOTE Confidence: 0.9887215

00:54:40.375 --> 00:54:41.255 because I found this to

NOTE Confidence: 0.9887215

00:54:41.255 --> 00:54:42.555 be a very difficult question,

NOTE Confidence: 0.85595286

00:54:43.415 --> 00:54:44.775 for people. So I put

NOTE Confidence: 0.85595286

00:54:44.775 --> 00:54:45.150 a hint.

NOTE Confidence: 0.95059276

00:54:46.109 --> 00:54:47.569 And, these different,

NOTE Confidence: 0.96835196

00:54:48.270 --> 00:54:50.109 characters reflect her different emotional

NOTE Confidence: 0.96835196

00:54:50.109 --> 00:54:52.589 states. Ichimoda was, her state

NOTE Confidence: 0.96835196

00:54:52.589 --> 00:54:53.950 for negative affect, and she

NOTE Confidence: 0.96835196

00:54:53.950 --> 00:54:55.250 needed help with regulating.

NOTE Confidence: 0.90873766

00:54:55.789 --> 00:54:56.750 And the the idea here

NOTE Confidence: 0.90873766

00:54:56.750 --> 00:54:57.969 is can we use neuroscience

NOTE Confidence: 0.8784114

00:54:58.270 --> 00:54:58.635 to,

NOTE Confidence: 0.99413615

00:54:59.195 --> 00:55:00.635 help children along this path

NOTE Confidence: 0.99413615

00:55:00.635 --> 00:55:01.855 of learning to regulate,

NOTE Confidence: 0.9638513

00:55:02.315 --> 00:55:04.255 and and reaching their potential?

NOTE Confidence: 0.9322276

00:55:06.155 --> 00:55:08.015 The band is My Chemical

NOTE Confidence: 0.9322276

00:55:08.075 --> 00:55:08.575 Romance.

NOTE Confidence: 0.97994894

00:55:09.195 --> 00:55:10.235 So and they're making a

NOTE Confidence: 0.97994894

00:55:10.235 --> 00:55:11.675 comeback from what I hear.

NOTE Confidence: 0.97994894

00:55:11.675 --> 00:55:13.055 So look out for them.

NOTE Confidence: 0.9684373

00:55:14.369 --> 00:55:15.890 Okay. So these are I

NOTE Confidence: 0.9684373

00:55:15.890 --> 00:55:17.010 wanted I wanna thank all

NOTE Confidence: 0.9684373

00:55:17.010 --> 00:55:18.130 of the students and trainees

NOTE Confidence: 0.9684373

00:55:18.130 --> 00:55:19.410 in my lab. They're they're

NOTE Confidence: 0.9684373

00:55:19.410 --> 00:55:20.770 the heroes. They drive everything

NOTE Confidence: 0.9684373

00:55:20.770 --> 00:55:21.569 that we do. They bring

NOTE Confidence: 0.9684373

00:55:21.569 --> 00:55:23.670 all this energy, exceptional ideas.

NOTE Confidence: 0.96238047

00:55:24.049 --> 00:55:25.089 Thank you to to all

NOTE Confidence: 0.96238047

00:55:25.089 --> 00:55:25.989 of you. And,

NOTE Confidence: 0.9736425

00:55:26.849 --> 00:55:28.710 and mentors, collaborators,

NOTE Confidence: 0.9295497

00:55:30.635 --> 00:55:31.435 thank you. So,

NOTE Confidence: 0.9990972

00:55:32.795 --> 00:55:34.094 happy to take any questions.

NOTE Confidence: 0.9343986

00:55:43.950 --> 00:55:44.450 Mhmm.

NOTE Confidence: 0.8880218

00:55:55.310 --> 00:55:56.510 Mike, they have a question

NOTE Confidence: 0.8880218

00:55:56.510 --> 00:55:58.234 at least. There's another one?

NOTE Confidence: 0.8880218

00:55:58.295 --> 00:55:59.255 Yes. First of all, thank

NOTE Confidence: 0.8880218

00:55:59.255 --> 00:56:00.055 you so much for this

NOTE Confidence: 0.8880218

00:56:00.055 --> 00:56:00.555 really

NOTE Confidence: 0.90854603

00:56:01.255 --> 00:56:03.015 spectacular work. It's a lot

NOTE Confidence: 0.90854603

00:56:03.015 --> 00:56:05.174 of work. So congratulations. Thank

NOTE Confidence: 0.90854603

00:56:05.174 --> 00:56:05.674 you.

NOTE Confidence: 0.95208734

00:56:05.974 --> 00:56:07.414 On the clinical implications that

NOTE Confidence: 0.95208734

00:56:07.414 --> 00:56:08.295 you said at the end,

NOTE Confidence: 0.95208734

00:56:08.295 --> 00:56:09.194 I was wondering

NOTE Confidence: 0.9340326

00:56:10.380 --> 00:56:11.420 very early in one of

NOTE Confidence: 0.9340326

00:56:11.420 --> 00:56:12.460 your early slides, you put

NOTE Confidence: 0.9340326

00:56:12.460 --> 00:56:13.599 the breakdown of the diagnosis

NOTE Confidence: 0.9340326

00:56:13.819 --> 00:56:14.400 of kids,

NOTE Confidence: 0.9383881

00:56:14.700 --> 00:56:15.900 and that seems like so

NOTE Confidence: 0.9383881

00:56:15.900 --> 00:56:18.059 retro. Right? Mhmm. ODD, whatever

NOTE Confidence: 0.9383881

00:56:18.059 --> 00:56:18.799 that means.

NOTE Confidence: 0.93622416

00:56:19.260 --> 00:56:21.260 So I'm wondering whether through

NOTE Confidence: 0.93622416

00:56:21.260 --> 00:56:23.039 your science on these approaches

NOTE Confidence: 0.94450647

00:56:23.420 --> 00:56:25.105 and perhaps with our doc

NOTE Confidence: 0.94450647

00:56:25.585 --> 00:56:26.545 Mhmm. She didn't mention. So

NOTE Confidence: 0.94450647

00:56:26.545 --> 00:56:27.344 I I wonder where it

NOTE Confidence: 0.94450647

00:56:27.344 --> 00:56:28.785 fits here. Right. Whether that

NOTE Confidence: 0.94450647

00:56:28.785 --> 00:56:29.905 could be a clinical implication

NOTE Confidence: 0.94450647

00:56:29.905 --> 00:56:31.344 moving from an ODD, whatever

NOTE Confidence: 0.94450647

00:56:31.344 --> 00:56:32.785 that means Mhmm. To a

NOTE Confidence: 0.94450647

00:56:32.785 --> 00:56:34.065 p value or a z

NOTE Confidence: 0.94450647

00:56:34.065 --> 00:56:35.425 value or something. Can you

NOTE Confidence: 0.94450647

00:56:35.425 --> 00:56:36.465 comment on that? Yes. Thank

NOTE Confidence: 0.94450647

00:56:36.465 --> 00:56:37.364 you for the question.

NOTE Confidence: 0.90149385

00:56:38.705 --> 00:56:40.400 So I, RDoc was,

NOTE Confidence: 0.94401854

00:56:41.920 --> 00:56:43.200 I guess, implicit in in

NOTE Confidence: 0.94401854

00:56:43.280 --> 00:56:44.640 I I I right? So

NOTE Confidence: 0.94401854

00:56:44.640 --> 00:56:45.120 we,

NOTE Confidence: 0.96533084

00:56:45.440 --> 00:56:46.660 when I mentioned transdiagnostic,

NOTE Confidence: 0.99341637

00:56:46.960 --> 00:56:48.000 I think one thing is

NOTE Confidence: 0.99341637

00:56:48.000 --> 00:56:48.500 we,

NOTE Confidence: 0.951681

00:56:49.440 --> 00:56:50.960 we we do use a

NOTE Confidence: 0.951681

00:56:50.960 --> 00:56:52.080 lot of these principles from

NOTE Confidence: 0.951681

00:56:52.080 --> 00:56:53.780 RDoc and thinking about these

NOTE Confidence: 0.98462343

00:56:54.855 --> 00:56:56.075 networks that are transdiagnostic.

NOTE Confidence: 0.98496777

00:56:57.575 --> 00:56:58.075 And

NOTE Confidence: 0.9471929

00:56:58.455 --> 00:57:00.155 it's interesting that sometimes,

NOTE Confidence: 0.95582044

00:57:01.094 --> 00:57:03.015 studies have suggested that these,

NOTE Confidence: 0.8943564

00:57:04.614 --> 00:57:06.660 categorical approach such as a

NOTE Confidence: 0.8943564

00:57:06.819 --> 00:57:08.359 DSM five has not really

NOTE Confidence: 0.98892164

00:57:08.819 --> 00:57:10.500 necessarily led to any type

NOTE Confidence: 0.98892164

00:57:10.500 --> 00:57:10.819 of,

NOTE Confidence: 0.9510166

00:57:12.420 --> 00:57:15.380 validated biomarkers. And and, the

NOTE Confidence: 0.9510166

00:57:15.380 --> 00:57:15.880 translational

NOTE Confidence: 0.9503146

00:57:16.180 --> 00:57:18.180 approach might add, more of

NOTE Confidence: 0.9503146

00:57:18.180 --> 00:57:19.960 a nuance, might help advance,

NOTE Confidence: 0.9503146

00:57:19.965 --> 00:57:21.962 this might map more closely

NOTE Confidence: 0.9503146

00:57:21.962 --> 00:57:24.358 onto, I I guess, real

NOTE Confidence: 0.9503146

00:57:24.358 --> 00:57:26.754 world heterogeneity. So we we

NOTE Confidence: 0.9503146

00:57:26.754 --> 00:57:29.150 do, actually, we we do,

NOTE Confidence: 0.9503146

00:57:29.550 --> 00:57:31.546 conceptualize a lot of what

NOTE Confidence: 0.9503146

00:57:31.546 --> 00:57:33.543 we do transdiagnostically, and we

NOTE Confidence: 0.9503146

00:57:33.543 --> 00:57:35.540 we don't necessarily base inclusion

NOTE Confidence: 0.9503146

00:57:35.540 --> 00:57:35.940 on

NOTE Confidence: 0.9455121

00:57:36.819 --> 00:57:39.300 diagnosis cutoffs. We do collect

NOTE Confidence: 0.9455121

00:57:39.300 --> 00:57:41.380 diagnostic information for our our

NOTE Confidence: 0.9455121

00:57:41.380 --> 00:57:43.460 analysis, but, we we really

NOTE Confidence: 0.9455121

00:57:43.460 --> 00:57:44.359 base it on,

NOTE Confidence: 0.96442795

00:57:45.300 --> 00:57:46.980 severity of of symptoms and

NOTE Confidence: 0.96442795

00:57:46.980 --> 00:57:48.200 we do try to capture,

NOTE Confidence: 0.6565752

00:57:48.500 --> 00:57:49.424 this heterogeneity.

NOTE Confidence: 0.8842006

00:57:50.684 --> 00:57:51.664 And really who

NOTE Confidence: 0.9830701

00:57:51.964 --> 00:57:53.244 who is interested in if

NOTE Confidence: 0.9830701

00:57:53.244 --> 00:57:54.525 children wanna complete a scan,

NOTE Confidence: 0.9830701

00:57:54.525 --> 00:57:55.585 we will do our best,

NOTE Confidence: 0.98627925

00:57:56.684 --> 00:57:57.964 to acclimate them to this

NOTE Confidence: 0.98627925

00:57:57.964 --> 00:57:59.085 environment and and help make

NOTE Confidence: 0.98627925

00:57:59.085 --> 00:58:00.625 this a success for them.

NOTE Confidence: 0.98627925

00:58:00.924 --> 00:58:01.885 But we have been using

NOTE Confidence: 0.98627925

00:58:01.885 --> 00:58:04.170 other approaches such as, CCA

NOTE Confidence: 0.98627925

00:58:04.310 --> 00:58:04.970 to take,

NOTE Confidence: 0.96515465

00:58:05.670 --> 00:58:07.130 to map these symptom dimensions

NOTE Confidence: 0.96515465

00:58:07.270 --> 00:58:07.770 onto,

NOTE Confidence: 0.98413545

00:58:08.310 --> 00:58:09.670 neural markers, which we think

NOTE Confidence: 0.98413545

00:58:09.670 --> 00:58:10.890 might be more of a,

NOTE Confidence: 0.9736721

00:58:12.470 --> 00:58:13.930 potential approach for,

NOTE Confidence: 0.9318315

00:58:14.550 --> 00:58:15.770 elucidating transdiagnostic

NOTE Confidence: 0.98116124

00:58:16.150 --> 00:58:17.350 markers. And and other groups

NOTE Confidence: 0.98116124

00:58:17.350 --> 00:58:18.795 have used this type of

NOTE Confidence: 0.98116124

00:58:18.795 --> 00:58:20.714 canonical correlation approaches as well

NOTE Confidence: 0.98116124

00:58:20.714 --> 00:58:22.415 and other computational approaches.

NOTE Confidence: 0.91476196

00:58:23.355 --> 00:58:24.714 Thank you. I believe we

NOTE Confidence: 0.91476196

00:58:24.714 --> 00:58:26.635 have a question. Yes. Doctor.

NOTE Confidence: 0.91476196

00:58:26.635 --> 00:58:27.994 Brennan, if you'd like to

NOTE Confidence: 0.91476196

00:58:27.994 --> 00:58:28.494 unmute.

NOTE Confidence: 0.94324344

00:58:30.490 --> 00:58:31.850 Yes. Thank you for a

NOTE Confidence: 0.94324344

00:58:31.850 --> 00:58:32.250 great,

NOTE Confidence: 0.9922821

00:58:32.810 --> 00:58:34.750 presentation. This was very interesting.

NOTE Confidence: 0.96130157

00:58:35.610 --> 00:58:36.910 My question is,

NOTE Confidence: 0.72882307

00:58:37.770 --> 00:58:39.210 to we can actually hear

NOTE Confidence: 0.72882307

00:58:39.210 --> 00:58:40.730 you first seen. Sorry. Can

NOTE Confidence: 0.72882307

00:58:40.730 --> 00:58:41.550 you hear me?

NOTE Confidence: 0.9967994

00:58:43.770 --> 00:58:44.990 Can you hear me?

NOTE Confidence: 0.98969805

00:58:47.175 --> 00:58:47.675 Okay.

NOTE Confidence: 0.9674212

00:58:51.415 --> 00:58:52.395 Can you hear me?

NOTE Confidence: 0.8367112

00:58:54.135 --> 00:58:55.355 I'm probably not.

NOTE Confidence: 0.9439185

00:58:57.255 --> 00:58:58.695 I don't know why because

NOTE Confidence: 0.9439185

00:58:58.695 --> 00:58:59.675 I'm unmuted.

NOTE Confidence: 0.9649173

00:59:04.600 --> 00:59:06.060 Christine, can you try again?

NOTE Confidence: 0.9649173

00:59:06.120 --> 00:59:07.720 Okay. I'll try again. There

NOTE Confidence: 0.9649173

00:59:07.720 --> 00:59:08.840 we go. Great. Thanks. Okay.

NOTE Confidence: 0.9649173

00:59:08.840 --> 00:59:09.340 Alright.

NOTE Confidence: 0.9968198

00:59:09.880 --> 00:59:10.920 Thank you for a great

NOTE Confidence: 0.9968198

00:59:10.920 --> 00:59:11.420 presentation.

NOTE Confidence: 0.8782023

00:59:12.600 --> 00:59:13.900 This was very interesting.

NOTE Confidence: 0.97722524

00:59:14.840 --> 00:59:16.140 My question is,

NOTE Confidence: 0.99952096

00:59:16.455 --> 00:59:18.395 do you have any information

NOTE Confidence: 0.9940125

00:59:20.055 --> 00:59:20.795 on which

NOTE Confidence: 0.72688437

00:59:21.575 --> 00:59:22.475 social environments

NOTE Confidence: 0.8046546

00:59:23.095 --> 00:59:24.475 how social environments

NOTE Confidence: 0.99319345

00:59:25.175 --> 00:59:27.355 might contribute to the development

NOTE Confidence: 0.9903408

00:59:27.975 --> 00:59:28.795 of differential

NOTE Confidence: 0.9197755

00:59:29.495 --> 00:59:31.035 functional brain connectivity?

NOTE Confidence: 0.99680406

00:59:38.660 --> 00:59:39.160 Yes.

NOTE Confidence: 0.9799364

00:59:40.420 --> 00:59:41.540 Yes. Can you hear me

NOTE Confidence: 0.9799364

00:59:41.540 --> 00:59:42.040 okay

NOTE Confidence: 0.978514

00:59:42.820 --> 00:59:43.940 on Zoom? Yes. Yes. I

NOTE Confidence: 0.978514

00:59:43.940 --> 00:59:45.320 can. Okay. Okay. Great.

NOTE Confidence: 0.81799597

00:59:46.125 --> 00:59:46.865 Yeah. So,

NOTE Confidence: 0.9766424

00:59:47.645 --> 00:59:48.925 one one area I I

NOTE Confidence: 0.9766424

00:59:48.925 --> 00:59:50.045 didn't have time to go

NOTE Confidence: 0.9766424

00:59:50.045 --> 00:59:50.845 into was,

NOTE Confidence: 0.9501012

00:59:51.805 --> 00:59:52.845 you know, we we really

NOTE Confidence: 0.9501012

00:59:52.845 --> 00:59:54.145 collect I was mentioning,

NOTE Confidence: 0.9142358

00:59:54.765 --> 00:59:56.465 really, a quite extensive,

NOTE Confidence: 0.99930763

00:59:57.645 --> 00:59:58.145 characterization

NOTE Confidence: 0.9519874

00:59:58.525 --> 01:00:00.705 of measures from participants. And,

NOTE Confidence: 0.9892251

01:00:01.290 --> 01:00:02.890 in addition to emotion regulation

NOTE Confidence: 0.9892251

01:00:02.890 --> 01:00:03.630 and symptoms,

NOTE Confidence: 0.9916535

01:00:04.090 --> 01:00:05.550 we also wanna understand,

NOTE Confidence: 0.96033525

01:00:06.970 --> 01:00:07.470 children's,

NOTE Confidence: 0.99098855

01:00:08.170 --> 01:00:10.270 environment and exposure to childhood

NOTE Confidence: 0.99098855

01:00:10.330 --> 01:00:11.630 adversities as well,

NOTE Confidence: 0.9995062

01:00:12.010 --> 01:00:12.750 and protective

NOTE Confidence: 0.9902998

01:00:13.145 --> 01:00:14.525 factors for that matter.

NOTE Confidence: 0.9764972

01:00:15.305 --> 01:00:15.805 And,

NOTE Confidence: 0.9860747

01:00:16.345 --> 01:00:17.464 I think this goes back

NOTE Confidence: 0.9860747

01:00:17.464 --> 01:00:17.964 to,

NOTE Confidence: 0.86227155

01:00:19.065 --> 01:00:20.765 actually Zach and and,

NOTE Confidence: 0.90995723

01:00:21.385 --> 01:00:23.464 Eleni's project looking at emotion

NOTE Confidence: 0.90995723

01:00:23.464 --> 01:00:24.744 regulation a, b, c, d

NOTE Confidence: 0.90995723

01:00:24.744 --> 01:00:25.645 where they found,

NOTE Confidence: 0.99426544

01:00:26.640 --> 01:00:28.099 some very interesting findings,

NOTE Confidence: 0.9727942

01:00:28.880 --> 01:00:29.380 linking,

NOTE Confidence: 0.99371165

01:00:30.240 --> 01:00:32.740 children's exposure to family conflict,

NOTE Confidence: 0.9662694

01:00:33.599 --> 01:00:34.000 and,

NOTE Confidence: 0.99397707

01:00:34.480 --> 01:00:36.420 exposure to negative life events,

NOTE Confidence: 0.9681108

01:00:37.040 --> 01:00:37.520 as,

NOTE Confidence: 0.77328086

01:00:38.240 --> 01:00:38.980 linked to,

NOTE Confidence: 0.65592444

01:00:40.000 --> 01:00:40.500 increased

NOTE Confidence: 0.9522147

01:00:41.045 --> 01:00:43.365 impairment and emotion regulation and

NOTE Confidence: 0.9522147

01:00:43.365 --> 01:00:44.985 increased severity across,

NOTE Confidence: 0.98852843

01:00:45.605 --> 01:00:47.525 symptom domains. And within those

NOTE Confidence: 0.98852843

01:00:47.525 --> 01:00:48.025 two,

NOTE Confidence: 0.96461606

01:00:49.925 --> 01:00:51.685 areas of childhood adversities, it

NOTE Confidence: 0.96461606

01:00:51.685 --> 01:00:53.145 was really family conflict,

NOTE Confidence: 0.7349698

01:00:55.109 --> 01:00:55.609 that,

NOTE Confidence: 0.9617061

01:00:56.150 --> 01:00:57.349 well, it was family conflict

NOTE Confidence: 0.9617061

01:00:57.349 --> 01:00:59.029 and, exposure to negative life

NOTE Confidence: 0.9617061

01:00:59.029 --> 01:01:00.150 events that were two that

NOTE Confidence: 0.9617061

01:01:00.150 --> 01:01:01.910 we focused on, and this

NOTE Confidence: 0.9617061

01:01:01.910 --> 01:01:03.509 has also been, looked at

NOTE Confidence: 0.9617061

01:01:03.509 --> 01:01:04.630 in in prior work. So

NOTE Confidence: 0.9617061

01:01:04.630 --> 01:01:05.450 I would say,

NOTE Confidence: 0.9616865

01:01:06.710 --> 01:01:08.549 exposure to childhood adversities is

NOTE Confidence: 0.9616865

01:01:08.549 --> 01:01:09.349 something that,

NOTE Confidence: 0.9247745

01:01:10.865 --> 01:01:12.224 many groups are looking at,

NOTE Confidence: 0.9247745

01:01:12.224 --> 01:01:14.464 including our groups, to understand

NOTE Confidence: 0.9247745

01:01:14.464 --> 01:01:15.925 this link and more nuance

NOTE Confidence: 0.9247745

01:01:16.065 --> 01:01:18.305 with, disruptive behavior problems as

NOTE Confidence: 0.9247745

01:01:18.305 --> 01:01:19.984 well as other symptoms as

NOTE Confidence: 0.9247745

01:01:19.984 --> 01:01:20.484 well.

NOTE Confidence: 0.9993276

01:01:21.665 --> 01:01:22.405 Thank you.