00:00:00.000 --> 00:00:04.275 I would like to welcome everybody here at the

00:00:04.275 --> 00:00:07.988 Council victorium and also everyone online.

00:00:07.990 --> 00:00:10.454 And before we begin, I have a

00:00:10.454 --> 00:00:13.286 reminder next week we have a very

00:00:13.286 --> 00:00:15.411 interesting talk by Doctor Stephanie

00:00:15.411 --> 00:00:17.970 Gilson who speak about the history,

00:00:17.970 --> 00:00:19.870 hope and healing within the

00:00:19.870 --> 00:00:21.390 American Indian and Alaska,

00:00:21.390 --> 00:00:23.124 Alaska Native communities.

00:00:23.124 --> 00:00:27.170 So please put it on your calendar.

00:00:27.170 --> 00:00:29.792 And today, it's my tremendous pleasure

00:00:29.792 --> 00:00:33.049 to introduce to you doctor Fred Schick.

00:00:33.050 --> 00:00:35.330 Doctor Frederick is associate professor

00:00:35.330 --> 00:00:38.092 in general Pediatrics at the University

NOTE Confidence: 0.823045981333333

00:00:38.092 --> 00:00:40.969 of Washington I at School of Medicine.

NOTE Confidence: 0.823045981333333

00:00:40.970 --> 00:00:44.468 He's the director of the Seattle

NOTE Confidence: 0.823045981333333

00:00:44.468 --> 00:00:46.217 Children's Innovative Innovative

NOTE Confidence: 0.823045981333333

00:00:46.217 --> 00:00:49.236 Technologies Lab and and and Jack and Jack

NOTE Confidence: 0.823045981333333

00:00:49.236 --> 00:00:52.048 faculty here at the Child Study Center.

NOTE Confidence: 0.823045981333333

00:00:52.050 --> 00:00:54.738 He also directs the eye tracking core

NOTE Confidence: 0.823045981333333

00:00:54.738 --> 00:00:57.410 of the Autism Biomarker Consortium

NOTE Confidence: 0.823045981333333

00:00:57.410 --> 00:01:00.450 for Clinical Trials program.

NOTE Confidence: 0.823045981333333

00:01:00.450 --> 00:01:03.146 Now Fred is coming to us from Washington.

NOTE Confidence: 0.823045981333333

00:01:03.150 --> 00:01:06.040 But he has a very long history here at Yale,

NOTE Confidence: 0.823045981333333

00:01:06.040 --> 00:01:11.094 and Fred also has a very interesting.

NOTE Confidence: 0.823045981333333

00:01:11.100 --> 00:01:13.168 History of educational history.

NOTE Confidence: 0.823045981333333

00:01:13.168 --> 00:01:17.309 So Fred was trained first as a engineer.

NOTE Confidence: 0.823045981333333

00:01:17.310 --> 00:01:18.098 At Caltech.

NOTE Confidence: 0.823045981333333

00:01:18.098 --> 00:01:21.801 And then he got his doctoral degree here at

NOTE Confidence: 0.823045981333333

00:01:21.801 --> 00:01:24.597 Yale in the Computer science department.

NOTE Confidence: 0.823045981333333

00:01:24.600 --> 00:01:26.854 And then both as a pre doctoral

NOTE Confidence: 0.823045981333333

00:01:26.854 --> 00:01:27.820 and postdoctoral fellow,

NOTE Confidence: 0.823045981333333

00:01:27.820 --> 00:01:30.420 he received training in developmental

NOTE Confidence: 0.823045981333333

00:01:30.420 --> 00:01:33.020 psychopathology here at the Yale

NOTE Confidence: 0.823045981333333

00:01:33.100 --> 00:01:35.480 Child Study Center in in my lab.

NOTE Confidence: 0.823045981333333

00:01:35.480 --> 00:01:38.020 I've known Fred for almost,

NOTE Confidence: 0.823045981333333

00:01:38.020 --> 00:01:40.456 I'd like to say 20 years,

NOTE Confidence: 0.823045981333333

00:01:40.460 --> 00:01:43.540 and Fred is truly a brilliant scientist.

NOTE Confidence: 0.823045981333333

00:01:43.540 --> 00:01:46.599 He's well recognized expert in his area,

NOTE Confidence: 0.823045981333333

00:01:46.600 --> 00:01:49.060 he's very sought after collaborator

NOTE Confidence: 0.823045981333333

00:01:49.060 --> 00:01:52.960 and I also know him as a very kind,

NOTE Confidence: 0.823045981333333

00:01:52.960 --> 00:01:57.480 generous and humble person.

NOTE Confidence: 0.823045981333333

00:01:57.480 --> 00:02:00.336 Over the past decade or more,

NOTE Confidence: 0.823045981333333

00:02:00.340 --> 00:02:03.220 Fred has been a leader in the field,

NOTE Confidence: 0.823045981333333

00:02:03.220 --> 00:02:06.118 that in the field that aims to

NOTE Confidence: 0.823045981333333

00:02:06.118 --> 00:02:08.829 bring the cutting edge technology.

NOTE Confidence: 0.823045981333333

00:02:08.830 --> 00:02:11.310 Into the field of developmental

NOTE Confidence: 0.823045981333333

00:02:11.310 --> 00:02:13.790 disorders in service of improving

NOTE Confidence: 0.823045981333333

00:02:13.871 --> 00:02:16.619 diagnostic and therapeutic services.

NOTE Confidence: 0.823045981333333

00:02:16.620 --> 00:02:16.967 Now,

NOTE Confidence: 0.823045981333333

00:02:16.967 --> 00:02:19.396 Fred's work in this area is driven

NOTE Confidence: 0.823045981333333

00:02:19.396 --> 00:02:22.274 by very deep expertise in terms

NOTE Confidence: 0.823045981333333

00:02:22.274 --> 00:02:23.855 of technological advances,

NOTE Confidence: 0.823045981333333

00:02:23.860 --> 00:02:25.512 computational science,

NOTE Confidence: 0.823045981333333

00:02:25.512 --> 00:02:28.816 statistics and developmental psychopathology,

NOTE Confidence: 0.823045981333333

00:02:28.820 --> 00:02:32.369 and the latter comes with a very

NOTE Confidence: 0.823045981333333

00:02:32.369 --> 00:02:34.350 important recognition or understanding

NOTE Confidence: 0.823045981333333

00:02:34.350 --> 00:02:37.780 and deep respect for the needs and

NOTE Confidence: 0.823045981333333

00:02:37.867 --> 00:02:40.744 hopes of the kids and their families.

NOTE Confidence: 0.823045981333333

00:02:40.750 --> 00:02:44.502 So we are here for a wonderful talk and Fred,

NOTE Confidence: 0.823045981333333

00:02:44.502 --> 00:02:47.649 welcome and it's wonderful to have you back.

NOTE Confidence: 0.710298884

00:03:02.360 --> 00:03:03.550 Did I break it? Nope.

NOTE Confidence: 0.710298884

00:03:03.550 --> 00:03:06.900 I broke it. My fault.

NOTE Confidence: 0.710298884

00:03:06.900 --> 00:03:08.046 I don't think it's anyone's fault.

NOTE Confidence: 0.710298884

00:03:08.050 --> 00:03:10.750 It's Zoom's fault, of course.

NOTE Confidence: 0.710298884

00:03:10.750 --> 00:03:12.230 There you go. Awesome.

NOTE Confidence: 0.710298884

00:03:12.230 --> 00:03:14.706 All right, so I just hit the share button.

NOTE Confidence: 0.710298884

00:03:14.710 --> 00:03:16.546 We're good, and we're all set.

NOTE Confidence: 0.710298884

00:03:16.550 --> 00:03:18.698 Sweet. All right. So thank you,

NOTE Confidence: 0.710298884

00:03:18.700 --> 00:03:20.230 coach, for that great introduction.

NOTE Confidence: 0.710298884

00:03:20.230 --> 00:03:23.404 It's. Sorry, what did I do there?

NOTE Confidence: 0.710298884

00:03:23.404 --> 00:03:25.322 It's it's really a pleasure to be

NOTE Confidence: 0.710298884

00:03:25.322 --> 00:03:27.575 back and see so many of my favorite

NOTE Confidence: 0.710298884

00:03:27.575 --> 00:03:29.460 people sitting here in the audience.

NOTE Confidence: 0.742478373333333

00:03:33.420 --> 00:03:36.018 OK. It's all right. All right.

NOTE Confidence: 0.742478373333333

00:03:36.020 --> 00:03:38.567 All right, so the title of my talk is

NOTE Confidence: 0.742478373333333

00:03:38.567 --> 00:03:40.610 digital divides meets digital bridges

NOTE Confidence: 0.742478373333333

00:03:40.610 --> 00:03:42.825 is still breaking it. I'm sorry.

NOTE Confidence: 0.742478373333333

00:03:42.825 --> 00:03:46.780 I'll. I'll stand over here, OK?

NOTE Confidence: 0.742478373333333

00:03:46.780 --> 00:03:51.600 And so just to to get started a little bit,

NOTE Confidence: 0.742478373333333

00:03:51.600 --> 00:03:53.760 I'm just going, oh, what happened?

NOTE Confidence: 0.742478373333333

00:03:53.760 --> 00:03:57.030 I have conflicts of interest. Receives.

NOTE Confidence: 0.742478373333333

00:03:57.030 --> 00:03:59.070 I do some consulting for Janssen.

NOTE Confidence: 0.742478373333333

00:03:59.070 --> 00:04:01.247 I did some consulting for Roche some.

NOTE Confidence: 0.742478373333333

00:04:01.250 --> 00:04:03.294 Just be upfront that anything I talk

NOTE Confidence: 0.742478373333333

00:04:03.294 --> 00:04:05.268 about that has to deal with drug,

NOTE Confidence: 0.742478373333333

00:04:05.270 --> 00:04:07.050 just remember the drug money.

NOTE Confidence: 0.742478373333333

00:04:07.050 --> 00:04:09.060 All right, sorry.

NOTE Confidence: 0.8503326875

00:04:11.990 --> 00:04:14.510 Got it. If I wasn't so sleep deprived,

NOTE Confidence: 0.8503326875

00:04:14.510 --> 00:04:15.840 I would totally remember why

NOTE Confidence: 0.8503326875

00:04:15.840 --> 00:04:17.550 my next slide is all right.

NOTE Confidence: 0.8503326875

00:04:17.550 --> 00:04:21.210 So. Give you a little bit of

NOTE Confidence: 0.8503326875

00:04:21.210 --> 00:04:23.419 a a idea of my background.

NOTE Confidence: 0.8503326875

00:04:23.420 --> 00:04:26.885 So actually I I started out after

NOTE Confidence: 0.8503326875

00:04:26.885 --> 00:04:28.770 college thinking that I would just

NOTE Confidence: 0.8503326875

00:04:28.770 --> 00:04:30.503 never have anything to do with

NOTE Confidence: 0.8503326875

00:04:30.503 --> 00:04:32.231 academics ever again and started my

NOTE Confidence: 0.8503326875

00:04:32.231 --> 00:04:34.440 career off as a video game programmer.

NOTE Confidence: 0.8503326875

00:04:34.440 --> 00:04:36.304 And you know, I don't know if any

NOTE Confidence: 0.8503326875

00:04:36.304 --> 00:04:38.457 of you know video game programmers,

NOTE Confidence: 0.8503326875

00:04:38.460 --> 00:04:40.310 but it's pretty intensive position.

NOTE Confidence: 0.8503326875

00:04:40.310 --> 00:04:41.882 You burnout really quickly and I

NOTE Confidence: 0.8503326875

00:04:41.882 --> 00:04:43.969 didn't realize it at the time but I

NOTE Confidence: 0.8503326875

00:04:43.969 --> 00:04:45.849 completely burned out and I decided to

NOTE Confidence: 0.8503326875

00:04:45.849 --> 00:04:47.579 do something completely different that.

NOTE Confidence: 0.8503326875

00:04:47.580 --> 00:04:49.141 You know, I slept under my desk

NOTE Confidence: 0.8503326875

00:04:49.141 --> 00:04:50.686 a lot at the Sony PlayStation

NOTE Confidence: 0.8503326875

00:04:50.686 --> 00:04:52.597 when I was when I was there.

NOTE Confidence: 0.8503326875

00:04:52.600 --> 00:04:53.979 And so it really just decided that

NOTE Confidence: 0.8503326875

00:04:53.979 --> 00:04:55.599 I was going to sleep under my desk.

NOTE Confidence: 0.8503326875

00:04:55.600 --> 00:04:57.440 I would do it for something more worthwhile.

NOTE Confidence: 0.8503326875

00:04:57.440 --> 00:04:59.843 So I went into research just on a lark.

NOTE Confidence: 0.8503326875

00:04:59.850 --> 00:05:01.380 I actually worked for free for,

NOTE Confidence: 0.8503326875

00:05:01.380 --> 00:05:02.689 I think it was like six months.

NOTE Confidence: 0.8503326875

00:05:02.690 --> 00:05:03.770 They were really convinced that

NOTE Confidence: 0.8503326875

00:05:03.770 --> 00:05:05.491 I was just going to go back to

NOTE Confidence: 0.8503326875

00:05:05.491 --> 00:05:06.679 industry and I really loved it.

NOTE Confidence: 0.8503326875

00:05:06.680 --> 00:05:08.213 And it was at the Huntington Medical

NOTE Confidence: 0.8503326875

00:05:08.213 --> 00:05:09.400 Research Institutes where I was working,

NOTE Confidence: 0.8503326875

00:05:09.400 --> 00:05:13.054 didn't doing some work on. On Mr.

NOTE Confidence: 0.8503326875

00:05:13.054 --> 00:05:17.200 spectroscopy, looking at in vivo, Mr.

NOTE Confidence: 0.8503326875

00:05:17.200 --> 00:05:17.910 spectroscopy,

NOTE Confidence: 0.8503326875

00:05:17.910 --> 00:05:19.830 H11H spectroscopy of the the

NOTE Confidence: 0.8503326875

00:05:19.830 --> 00:05:21.564 brain and decided that, well,

NOTE Confidence: 0.8503326875

00:05:21.564 --> 00:05:23.116 if I want to keep on doing this

NOTE Confidence: 0.8503326875

00:05:23.116 --> 00:05:24.329 research they need to get a PhD.

NOTE Confidence: 0.8503326875

00:05:24.330 --> 00:05:25.210 And I was like, well,

NOTE Confidence: 0.8503326875

00:05:25.210 --> 00:05:26.032 I like computers,

NOTE Confidence: 0.8503326875

00:05:26.032 --> 00:05:27.950 so maybe I'll be a computer scientist.

NOTE Confidence: 0.8503326875

00:05:27.950 --> 00:05:31.050 So join the computer science

NOTE Confidence: 0.8503326875

00:05:31.050 --> 00:05:32.450 department under Brian Scaletti,

NOTE Confidence: 0.8503326875

00:05:32.450 --> 00:05:35.218 who is a leader of a social

NOTE Confidence: 0.8503326875

00:05:35.218 --> 00:05:36.408 robotics laboratory.

NOTE Confidence: 0.8503326875

00:05:36.410 --> 00:05:38.349 And the thing that I was really

NOTE Confidence: 0.8503326875

00:05:38.349 --> 00:05:40.030 attracted to for my reason for

NOTE Confidence: 0.8503326875

00:05:40.030 --> 00:05:41.608 coming to to Yale was that.

NOTE Confidence: 0.8503326875

00:05:41.610 --> 00:05:44.886 He was he really had this belief

NOTE Confidence: 0.8503326875

00:05:44.886 --> 00:05:47.499 that social robotics could bridge

NOTE Confidence: 0.8503326875

00:05:47.499 --> 00:05:50.279 between real life problems that

NOTE Confidence: 0.8503326875

00:05:50.280 --> 00:05:51.900 that individuals with autism,

NOTE Confidence: 0.8503326875

00:05:51.900 --> 00:05:53.520 children with autism had,

NOTE Confidence: 0.8503326875

00:05:53.520 --> 00:05:55.855 and that these technologies could

NOTE Confidence: 0.8503326875

00:05:55.855 --> 00:05:57.723 make a meaningful difference.

NOTE Confidence: 0.8503326875

00:05:57.730 --> 00:05:59.485 And so my my task at the time was

NOTE Confidence: 0.8503326875

00:05:59.485 --> 00:06:01.081 to build this visual attention

NOTE Confidence: 0.8503326875

00:06:01.081 --> 00:06:03.097 system for this little baby robot.

NOTE Confidence: 0.8503326875

00:06:03.100 --> 00:06:04.876 So it was a robot that was meant

NOTE Confidence: 0.8503326875

00:06:04.876 --> 00:06:06.766 to look like and act like a baby.

NOTE Confidence: 0.8503326875

00:06:06.770 --> 00:06:09.854 And in order to program that

NOTE Confidence: 0.8503326875

00:06:09.854 --> 00:06:11.390 that baby robots Technic system.

NOTE Confidence: 0.8503326875

00:06:11.390 --> 00:06:13.238 I came over to the Child Study

NOTE Confidence: 0.8503326875

00:06:13.238 --> 00:06:14.548 Center and looked sad for.

NOTE Confidence: 0.8503326875

00:06:14.550 --> 00:06:16.704 Must have been like a month

00:06:16.704 --> 00:06:19.562 trying to get some data gaze data

00:06:19.562 --> 00:06:21.346 from actual human babies.

00:06:21.350 --> 00:06:25.103 And and eventually I met Kasha and

00:06:25.103 --> 00:06:27.714 Kasha and I worked out a deal.

00:06:27.720 --> 00:06:31.048 Which was that I was kind of, you know,

00:06:31.048 --> 00:06:32.920 I need some data from babies.

00:06:32.920 --> 00:06:34.824 And she was looking for someone to

00:06:34.824 --> 00:06:37.060 to help set up an eye tracking lab.

00:06:37.060 --> 00:06:38.929 And the two of us started working

00:06:38.929 --> 00:06:41.115 together and I I think I I that was it.

00:06:41.120 --> 00:06:42.360 That started my entire career.

00:06:42.360 --> 00:06:43.560 I never looked back.

00:06:43.560 --> 00:06:46.193 That was a credit card for the formative

00:06:46.193 --> 00:06:48.108 experience of the research that

00:06:48.108 --> 00:06:50.667 really gave my life's work direction.

00:06:50.667 --> 00:06:53.950 And so after all of that working

NOTE Confidence: 0.821807727142857

00:06:54.042 --> 00:06:55.750 in eye tracking and.

NOTE Confidence: 0.821807727142857

00:06:55.750 --> 00:06:57.500 Working in the field of autism research,

NOTE Confidence: 0.821807727142857

00:06:57.500 --> 00:06:58.304 eventually, of course,

NOTE Confidence: 0.821807727142857

00:06:58.304 --> 00:06:59.866 you know, as things happen,

NOTE Confidence: 0.821807727142857

00:06:59.866 --> 00:07:02.260 came back to thinking about video games.

NOTE Confidence: 0.821807727142857

00:07:02.260 --> 00:07:04.644 And so even though there's a lot of

NOTE Confidence: 0.821807727142857

00:07:04.644 --> 00:07:06.937 different types of research that I'm really,

NOTE Confidence: 0.821807727142857

00:07:06.940 --> 00:07:08.251 really interested in,

NOTE Confidence: 0.821807727142857

00:07:08.251 --> 00:07:10.436 I'm going to focus primarily

NOTE Confidence: 0.821807727142857

00:07:10.436 --> 00:07:12.133 on technology in this talk.

NOTE Confidence: 0.821807727142857

00:07:12.133 --> 00:07:13.771 So now my laboratory in Seattle

NOTE Confidence: 0.821807727142857

00:07:13.771 --> 00:07:15.773 is at the Seattle Children's

NOTE Confidence: 0.821807727142857

00:07:15.773 --> 00:07:17.450 Innovative Technologies Labs,

NOTE Confidence: 0.821807727142857

00:07:17.450 --> 00:07:19.334 and we focus on using technologies

NOTE Confidence: 0.821807727142857

00:07:19.334 --> 00:07:21.115 in order to address real

NOTE Confidence: 0.821807727142857

00:07:21.115 --> 00:07:22.975 problems that individuals with

NOTE Confidence: 0.821807727142857

00:07:22.975 --> 00:07:24.835 developmental disabilities may have.

NOTE Confidence: 0.821807727142857

00:07:24.840 --> 00:07:26.024 And so we use.

NOTE Confidence: 0.821807727142857

00:07:26.024 --> 00:07:27.504 A wide range of different

NOTE Confidence: 0.821807727142857

00:07:27.504 --> 00:07:28.899 types of technologies,

NOTE Confidence: 0.821807727142857

00:07:28.900 --> 00:07:31.660 but most of these technologies focus

NOTE Confidence: 0.821807727142857

00:07:31.660 --> 00:07:33.922 around the sole condition of autism.

NOTE Confidence: 0.821807727142857

00:07:33.922 --> 00:07:35.980 So it really is focused on this

NOTE Confidence: 0.821807727142857

00:07:36.037 --> 00:07:37.469 idea of building technologies

NOTE Confidence: 0.821807727142857

00:07:37.469 --> 00:07:39.259 to address the core social,

NOTE Confidence: 0.821807727142857

00:07:39.260 --> 00:07:41.072 communication and interaction deficits

NOTE Confidence: 0.821807727142857

00:07:41.072 --> 00:07:43.337 in autism under the consideration

NOTE Confidence: 0.821807727142857

00:07:43.337 --> 00:07:45.629 of the restricted and repetitive

NOTE Confidence: 0.821807727142857

00:07:45.629 --> 00:07:47.844 behaviors that define the condition.

NOTE Confidence: 0.821807727142857

00:07:47.850 --> 00:07:49.762 And who do I have to admit this

NOTE Confidence: 0.821807727142857

00:07:49.762 --> 00:07:51.240 person into the waiting room?

NOTE Confidence: 0.821807727142857

00:07:51.240 --> 00:07:52.932 Oh, but I I really feel like I should.

NOTE Confidence: 0.821807727142857

00:07:52.940 --> 00:07:55.220 So, so I did all right.

NOTE Confidence: 0.821807727142857

00:07:55.220 --> 00:07:57.810 So, so why why technology?

NOTE Confidence: 0.821807727142857

00:07:57.810 --> 00:07:58.956 Why are we even here talking

NOTE Confidence: 0.821807727142857

00:07:58.956 --> 00:07:59.338 about technology?

NOTE Confidence: 0.821807727142857

00:07:59.340 --> 00:08:01.252 Well there's there there's

NOTE Confidence: 0.821807727142857

00:08:01.252 --> 00:08:04.631 reasons to believe that the use of

NOTE Confidence: 0.821807727142857

00:08:04.631 --> 00:08:07.199 technologies in therapies and in in

NOTE Confidence: 0.821807727142857

00:08:07.199 --> 00:08:10.217 using them to to have some type of

NOTE Confidence: 0.821807727142857

00:08:10.220 --> 00:08:12.155 clinical impact for children with

NOTE Confidence: 0.821807727142857

00:08:12.155 --> 00:08:14.759 autism may be special in some way.

NOTE Confidence: 0.821807727142857

00:08:14.760 --> 00:08:16.290 And the reason why we consider

NOTE Confidence: 0.821807727142857

00:08:16.290 --> 00:08:18.383 that it might be special is a

NOTE Confidence: 0.821807727142857

00:08:18.383 --> 00:08:19.731 long standing observation that

NOTE Confidence: 0.821807727142857

00:08:19.731 --> 00:08:21.180 many children with autism.

NOTE Confidence: 0.821807727142857

00:08:21.180 --> 00:08:22.925 Gravitate towards what we might

NOTE Confidence: 0.821807727142857

00:08:22.925 --> 00:08:24.670 think of as physical systems

NOTE Confidence: 0.821807727142857

00:08:24.733 --> 00:08:26.478 that are mechanical in nature,

NOTE Confidence: 0.821807727142857

00:08:26.480 --> 00:08:29.726 that have constructive component to them.

NOTE Confidence: 0.821807727142857

00:08:29.730 --> 00:08:31.668 Some work that was published quite

NOTE Confidence: 0.821807727142857

00:08:31.668 --> 00:08:33.928 a quite a while ago by Turner,

NOTE Confidence: 0.821807727142857

00:08:33.930 --> 00:08:36.969 Brown and Bodfish.

NOTE Confidence: 0.821807727142857

00:08:36.970 --> 00:08:39.964 Revealed that a majority of children

NOTE Confidence: 0.821807727142857

00:08:39.964 --> 00:08:42.758 with ASD had this predisposition

NOTE Confidence: 0.821807727142857

00:08:42.758 --> 00:08:46.142 to be really interested in

NOTE Confidence: 0.821807727142857

00:08:46.142 --> 00:08:48.430 this category of physics,

NOTE Confidence: 0.821807727142857

00:08:48.430 --> 00:08:49.910 which includes things like cranes,

NOTE Confidence: 0.821807727142857

00:08:49.910 --> 00:08:52.978 mechanical functions, trains, Legos,

NOTE Confidence: 0.821807727142857

00:08:52.978 --> 00:08:57.860 other mechanical systems and the.

NOTE Confidence: 0.821807727142857

00:08:57.860 --> 00:09:00.170 The thing about this specific

NOTE Confidence: 0.821807727142857

15

00:09:00.170 --> 00:09:03.320 type of interest is that we can

NOTE Confidence: 0.821807727142857

00:09:03.320 --> 00:09:05.564 really think of it as being.

NOTE Confidence: 0.821807727142857

00:09:05.570 --> 00:09:07.670 Used to catalyze additional

NOTE Confidence: 0.821807727142857

00:09:07.670 --> 00:09:09.245 types of treatment,

NOTE Confidence: 0.821807727142857

00:09:09.250 --> 00:09:11.890 additional types of of kind of

NOTE Confidence: 0.821807727142857

00:09:11.890 --> 00:09:14.616 powerful effects that can lead to

NOTE Confidence: 0.821807727142857

00:09:14.616 --> 00:09:17.268 positive change in children with ASD.

NOTE Confidence: 0.821807727142857

00:09:17.270 --> 00:09:19.530 So I'm going to start kind of where I began,

NOTE Confidence: 0.821807727142857

00:09:19.530 --> 00:09:20.782 which is in robots.

NOTE Confidence: 0.821807727142857

00:09:20.782 --> 00:09:23.088 And the robots that we talk about

NOTE Confidence: 0.821807727142857

00:09:23.088 --> 00:09:25.559 when we think about autism are special

NOTE Confidence: 0.821807727142857

00:09:25.559 --> 00:09:28.208 breed of robots called social robots.

NOTE Confidence: 0.821807727142857

00:09:28.210 --> 00:09:30.471 And these are robots that are as

NOTE Confidence: 0.821807727142857

00:09:30.471 --> 00:09:32.578 compared to like the robots that

NOTE Confidence: 0.821807727142857

00:09:32.578 --> 00:09:35.470 assemble cans and simple cars are ones that.

NOTE Confidence: 0.821807727142857

00:09:35.470 --> 00:09:37.534 Are meant to interface with people

NOTE Confidence: 0.821807727142857

00:09:37.534 --> 00:09:39.949 in a very natural manner and to

NOTE Confidence: 0.821807727142857

00:09:39.949 --> 00:09:41.893 address issues and and we can

NOTE Confidence: 0.821807727142857

00:09:41.893 --> 00:09:44.535 think of it as a natural interface

NOTE Confidence: 0.821807727142857

00:09:44.535 --> 00:09:45.660 of social interaction,

NOTE Confidence: 0.821807727142857

00:09:45.660 --> 00:09:49.048 but also to really focus upon and

NOTE Confidence: 0.821807727142857

00:09:49.048 --> 00:09:51.419 sometimes address core interactional

NOTE Confidence: 0.821807727142857

00:09:51.419 --> 00:09:54.739 questions in atypical development.

NOTE Confidence: 0.821807727142857

00:09:54.740 --> 00:09:57.828 So one of the first studies that was

NOTE Confidence: 0.821807727142857

00:09:57.828 --> 00:10:00.016 involved with was this study social

NOTE Confidence: 0.821807727142857

00:10:00.016 --> 00:10:01.786 robots as embedded reinforcers of

NOTE Confidence: 0.821807727142857

00:10:01.786 --> 00:10:03.507 social behavior in children with

NOTE Confidence: 0.821807727142857

00:10:03.507 --> 00:10:05.920 with autism and this was really let up.

NOTE Confidence: 0.821807727142857

00:10:05.920 --> 00:10:08.340 By someone who would later be a postdoc in my

NOTE Confidence: 0.76407249

00:10:08.395 --> 00:10:09.382 lab, Elizabeth Kim,

NOTE Confidence: 0.76407249

00:10:09.382 --> 00:10:12.470 as well as a host of really talented

NOTE Confidence: 0.76407249

00:10:12.549 --> 00:10:14.397 individuals including Ria Paul

NOTE Confidence: 0.76407249

00:10:14.397 --> 00:10:17.169 and of course my advisor Brian

NOTE Confidence: 0.76407249

00:10:17.246 --> 00:10:19.666 Scassellati and this this study,

NOTE Confidence: 0.76407249

00:10:19.670 --> 00:10:21.784 which was one of the first studies.

NOTE Confidence: 0.76407249

00:10:21.790 --> 00:10:24.214 I think it's hard to believe that it's

NOTE Confidence: 0.76407249

00:10:24.214 --> 00:10:26.751 been a decade since it came out really

NOTE Confidence: 0.76407249

00:10:26.751 --> 00:10:29.624 was one of the first show that using

NOTE Confidence: 0.76407249

00:10:29.624 --> 00:10:31.970 a robot in conjunction with another.

NOTE Confidence: 0.76407249

00:10:31.970 --> 00:10:33.218 Another examiner.

NOTE Confidence: 0.76407249

00:10:33.218 --> 00:10:36.962 Led to higher rates of communicative

NOTE Confidence: 0.76407249

00:10:36.962 --> 00:10:40.053 outputs as compared to if that

NOTE Confidence: 0.76407249

00:10:40.053 --> 00:10:42.411 robot was replaced with a person

NOTE Confidence: 0.76407249

00:10:42.411 --> 00:10:44.519 or a computer video game.

NOTE Confidence: 0.76407249

00:10:44.520 --> 00:10:46.084 Granted, 10 years ago,

NOTE Confidence: 0.76407249

00:10:46.084 --> 00:10:49.310 the video games were a lot different.

NOTE Confidence: 0.76407249

00:10:49.310 --> 00:10:52.890 But this idea that that.

NOTE Confidence: 0.76407249

00:10:52.890 --> 00:10:54.230 Robots could be something special.

NOTE Confidence: 0.76407249

00:10:54.230 --> 00:10:55.594 Technologies could be something

NOTE Confidence: 0.76407249

00:10:55.594 --> 00:10:56.617 special in individuals.

NOTE Confidence: 0.76407249

00:10:56.620 --> 00:10:58.525 Autism really is is exemplified

NOTE Confidence: 0.76407249

00:10:58.525 --> 00:11:01.483 by now a whole host of different

NOTE Confidence: 0.76407249

00:11:01.483 --> 00:11:03.427 types of research studies.

NOTE Confidence: 0.76407249

00:11:03.430 --> 00:11:06.223 But I'll give you one example which

NOTE Confidence: 0.76407249

00:11:06.223 --> 00:11:08.459 is work done by Laura Buchan Fuso,

NOTE Confidence: 0.76407249

00:11:08.459 --> 00:11:10.723 who was in my lab and now leads

NOTE Confidence: 0.76407249

00:11:10.723 --> 00:11:12.518 a company called Von Robotics,

NOTE Confidence: 0.76407249

00:11:12.520 --> 00:11:14.785 which is focused on building

NOTE Confidence: 0.76407249

00:11:14.785 --> 00:11:16.144 robots for education.

NOTE Confidence: 0.76407249

00:11:16.150 --> 00:11:20.175 OK, so this is a simple study where the

NOTE Confidence: 0.76407249

00:11:20.175 --> 00:11:23.640 child is given this task of correcting.

NOTE Confidence: 0.76407249

00:11:23.640 --> 00:11:25.670 Um.

NOTE Confidence: 0.76407249

00:11:25.670 --> 00:11:28.475 Actual mistakes in the conversation

NOTE Confidence: 0.76407249

00:11:28.475 --> 00:11:31.520 by the experimenter and or or the

NOTE Confidence: 0.76407249

00:11:31.520 --> 00:11:33.212 interactional partner and the.

NOTE Confidence: 0.76407249

00:11:33.212 --> 00:11:35.580 And you can see that that in this

NOTE Confidence: 0.76407249

00:11:35.655 --> 00:11:38.665 case where Laura plays the role of

NOTE Confidence: 0.76407249

00:11:38.665 --> 00:11:40.463 the interactional partner, this,

NOTE Confidence: 0.76407249

00:11:40.463 --> 00:11:42.978 this child is wholly uninterested.

NOTE Confidence: 0.76407249

00:11:42.980 --> 00:11:46.860 Now if we replace Laura with this robot,

NOTE Confidence: 0.76407249

00:11:46.860 --> 00:11:48.836 and this is a.

NOTE Confidence: 0.76407249

00:11:48.836 --> 00:11:51.306 Really simple robot called LED,

NOTE Confidence: 0.76407249

00:11:51.310 --> 00:11:55.452 a big characteristic of LE that's

NOTE Confidence: 0.76407249

00:11:55.452 --> 00:11:58.476 actually has a mouth that moves.

NOTE Confidence: 0.76407249

00:11:58.480 --> 00:12:01.354 And the reason why we created robot with

NOTE Confidence: 0.76407249

00:12:01.354 --> 00:12:03.853 the physical mouth was because we knew.

NOTE Confidence: 0.76407249

00:12:03.860 --> 00:12:05.894 We knew at the time through a lot of

NOTE Confidence: 0.76407249

00:12:05.894 --> 00:12:08.151 the work that that Kasha and I had

NOTE Confidence: 0.76407249

00:12:08.151 --> 00:12:09.871 been doing together that the mouth

NOTE Confidence: 0.76407249

00:12:09.871 --> 00:12:11.768 is actually an area of really key

NOTE Confidence: 0.76407249

00:12:11.770 --> 00:12:13.840 importance in terms of the looking

NOTE Confidence: 0.76407249

00:12:13.840 --> 00:12:15.680 patterns of children with autism.

NOTE Confidence: 0.76407249

00:12:15.680 --> 00:12:18.599 So you can see they start difference.

NOTE Confidence: 0.76407249

00:12:18.600 --> 00:12:19.064 You're right.

NOTE Confidence: 0.76407249

00:12:19.064 --> 00:12:20.456 The child's face lights up when

NOTE Confidence: 0.76407249

00:12:20.456 --> 00:12:22.109 he sees that robot begins to talk,

NOTE Confidence: 0.76407249

00:12:22.110 --> 00:12:24.576 and it really tells you something

NOTE Confidence: 0.76407249

00:12:24.576 --> 00:12:27.830 about the a very different kind of

NOTE Confidence: 0.76407249

00:12:27.830 --> 00:12:31.393 interaction that is catalyzed by this robot.

NOTE Confidence: 0.76407249

00:12:31.400 --> 00:12:32.035 So.

NOTE Confidence: 0.76407249

00:12:32.035 --> 00:12:35.210 Since that time, you know,

NOTE Confidence: 0.76407249

00:12:35.210 --> 00:12:36.980 a lot of additional work has

NOTE Confidence: 0.76407249

00:12:36.980 --> 00:12:38.850 come out in in robotics,

NOTE Confidence: 0.76407249

00:12:38.850 --> 00:12:39.890 the use of social robotics

NOTE Confidence: 0.76407249

00:12:39.890 --> 00:12:40.722 with children with autism.

NOTE Confidence: 0.76407249

00:12:40.730 --> 00:12:42.207 And it's gotten to the point where,

NOTE Confidence: 0.76407249

00:12:42.210 --> 00:12:42.548 you know,

NOTE Confidence: 0.76407249

00:12:42.548 --> 00:12:43.900 for a long time we were talking about

NOTE Confidence: 0.76407249

00:12:43.938 --> 00:12:45.090 what the evidence will get here.

NOTE Confidence: 0.76407249

00:12:45.090 --> 00:12:45.950 The evidence will get here.

NOTE Confidence: 0.76407249

00:12:45.950 --> 00:12:46.580 And well,

NOTE Confidence: 0.76407249

00:12:46.580 --> 00:12:48.470 I think now finally the evidence

NOTE Confidence: 0.76407249

00:12:48.470 --> 00:12:50.592 is starting to mount and it's

NOTE Confidence: 0.76407249

00:12:50.592 --> 00:12:51.666 really becoming powerful.

NOTE Confidence: 0.76407249

00:12:51.670 --> 00:12:54.302 And then it's believable that there is

NOTE Confidence: 0.76407249

00:12:54.302 --> 00:12:56.689 really something special about social robots.

NOTE Confidence: 0.76407249

00:12:56.690 --> 00:12:59.500 So this is a study that was done in the

NOTE Confidence: 0.76407249

00:12:59.574 --> 00:13:02.526 Netherlands by Van Vanden Brooks Meekins,

NOTE Confidence: 0.76407249

00:13:02.530 --> 00:13:03.746 who's had to pause.

NOTE Confidence: 0.76407249

00:13:03.746 --> 00:13:05.946 With that name so long names and

NOTE Confidence: 0.76407249

00:13:05.946 --> 00:13:08.202 this was a study that basically

NOTE Confidence: 0.76407249

00:13:08.202 --> 00:13:10.400 looked at pivotal response treatment

NOTE Confidence: 0.76407249

00:13:10.400 --> 00:13:14.070 with and without robots kind of as

NOTE Confidence: 0.76407249

00:13:14.070 --> 00:13:17.430 a addition to the intervention and

NOTE Confidence: 0.76407249

00:13:17.430 --> 00:13:21.918 when the robot was in the intervention.

NOTE Confidence: 0.76407249

00:13:21.920 --> 00:13:24.056 What happened was that we saw

NOTE Confidence: 0.76407249

00:13:24.056 --> 00:13:25.480 that the primary outcome

NOTE Confidence: 0.858354855333333

00:13:25.548 --> 00:13:27.882 measure which was apparent reported SRS

NOTE Confidence: 0.858354855333333

00:13:27.882 --> 00:13:30.718 ended up being much lower at the follow

NOTE Confidence: 0.858354855333333

00:13:30.718 --> 00:13:32.845 up as compared to both the condition

NOTE Confidence: 0.858354855333333

00:13:32.845 --> 00:13:35.285 where there was no robot and the condition

NOTE Confidence: 0.858354855333333

00:13:35.285 --> 00:13:37.437 where there was just treatment as usual.

NOTE Confidence: 0.858354855333333

00:13:37.440 --> 00:13:39.864 Now something to be to note here if

NOTE Confidence: 0.858354855333333

00:13:39.864 --> 00:13:41.934 you're carefully looking at those graph

NOTE Confidence: 0.858354855333333

00:13:41.934 --> 00:13:44.034 is that there's no difference between

NOTE Confidence: 0.858354855333333

00:13:44.095 --> 00:13:45.971 the PRT line and the treatment as

NOTE Confidence: 0.858354855333333

00:13:45.971 --> 00:13:48.220 usual and so that is a sticking point,

NOTE Confidence: 0.858354855333333

00:13:48.220 --> 00:13:50.940 but as it turns out.

NOTE Confidence: 0.858354855333333

00:13:50.940 --> 00:13:52.500 The studies of treatment as usual,

NOTE Confidence: 0.858354855333333

00:13:52.500 --> 00:13:55.617 as all of us know, are very different

NOTE Confidence: 0.858354855333333

00:13:55.617 --> 00:13:58.620 now than they were ten years ago.

NOTE Confidence: 0.858354855333333

00:13:58.620 --> 00:14:01.833 And so the treatment as usual actually

NOTE Confidence: 0.858354855333333

00:14:01.833 --> 00:14:05.206 also contained a lot of active ingredients

NOTE Confidence: 0.858354855333333

00:14:05.206 --> 00:14:08.819 that are probably pieces of PRT as well.

NOTE Confidence: 0.858354855333333

00:14:08.820 --> 00:14:11.532 But the key thing here really was that

NOTE Confidence: 0.858354855333333

00:14:11.532 --> 00:14:14.770 this is some of the first evidence in

NOTE Confidence: 0.858354855333333

00:14:14.770 --> 00:14:17.094 a really nicely controlled randomized

NOTE Confidence: 0.858354855333333

00:14:17.094 --> 00:14:20.640 controlled trial that there are improvements.

NOTE Confidence: 0.858354855333333

00:14:20.640 --> 00:14:22.986 Greater gains by children who are

NOTE Confidence: 0.858354855333333

00:14:22.986 --> 00:14:25.807 in pure T condition with robots

NOTE Confidence: 0.858354855333333

00:14:25.807 --> 00:14:27.577 augmenting the intervention.

NOTE Confidence: 0.858354855333333

00:14:27.580 --> 00:14:30.196 The way that these robots worked

NOTE Confidence: 0.858354855333333

00:14:30.196 --> 00:14:33.521 with the the child was that this

NOTE Confidence: 0.858354855333333

00:14:33.521 --> 00:14:36.268 was apparent directed at PRT,

NOTE Confidence: 0.858354855333333

00:14:36.268 --> 00:14:39.454 our parent parent pivotal response training,

NOTE Confidence: 0.858354855333333

00:14:39.454 --> 00:14:42.520 and the robot was used in order

NOTE Confidence: 0.858354855333333

00:14:42.601 --> 00:14:45.019 to model the types of behaviors.

NOTE Confidence: 0.858354855333333

00:14:45.020 --> 00:14:47.666 That's the things that should be rewarded

NOTE Confidence: 0.858354855333333

00:14:47.666 --> 00:14:51.130 and how to play these games with children.

NOTE Confidence: 0.858354855333333

00:14:51.130 --> 00:14:53.685 As a way of illustrating how these

NOTE Confidence: 0.858354855333333

00:14:53.685 --> 00:14:55.935 games should happen and another thing

NOTE Confidence: 0.858354855333333

00:14:55.935 --> 00:14:58.222 that was was impressive about this

NOTE Confidence: 0.858354855333333

00:14:58.222 --> 00:15:00.756 study was that we actually saw a

NOTE Confidence: 0.858354855333333

00:15:00.828 --> 00:15:03.324 greater proportion of children in the

NOTE Confidence: 0.858354855333333

00:15:03.324 --> 00:15:05.890 PRT plus robot condition who showed

NOTE Confidence: 0.858354855333333

00:15:05.890 --> 00:15:09.040 a positive improvements in the ados 2

NOTE Confidence: 0.858354855333333

00:15:09.040 --> 00:15:11.699 severity scores at at the end point.

NOTE Confidence: 0.815455183333333

00:15:13.920 --> 00:15:16.242 So the thing to notice here is that when

NOTE Confidence: 0.815455183333333

00:15:16.242 --> 00:15:18.653 we're talking about like this key, this

NOTE Confidence: 0.815455183333333

00:15:18.653 --> 00:15:21.218 inherent motivational property of robots,

NOTE Confidence: 0.815455183333333

00:15:21.220 --> 00:15:23.196 that this is really beyond what we might

NOTE Confidence: 0.815455183333333

00:15:23.196 --> 00:15:25.147 think of as a simple reinforcer, right?

NOTE Confidence: 0.815455183333333

00:15:25.147 --> 00:15:26.876 Like this is not just something that

NOTE Confidence: 0.815455183333333

00:15:26.876 --> 00:15:28.879 a child really wants to interact with,

NOTE Confidence: 0.815455183333333

00:15:28.880 --> 00:15:30.398 and so we'll do something in

NOTE Confidence: 0.815455183333333

00:15:30.398 --> 00:15:31.959 order to interact with the child.

NOTE Confidence: 0.815455183333333

00:15:31.960 --> 00:15:34.459 The difference here is that the robot

NOTE Confidence: 0.815455183333333

00:15:34.459 --> 00:15:36.386 can actually carry specific information

NOTE Confidence: 0.815455183333333

00:15:36.386 --> 00:15:39.151 that is key to delivering a specific

NOTE Confidence: 0.815455183333333

00:15:39.151 --> 00:15:41.720 type of training that is instrumental.

NOTE Confidence: 0.815455183333333

00:15:41.720 --> 00:15:43.832 In the ultimate positive gains that

NOTE Confidence: 0.815455183333333

00:15:43.832 --> 00:15:46.319 we want children with autism to go

NOTE Confidence: 0.815455183333333

00:15:46.319 --> 00:15:48.353 through as they go through these

NOTE Confidence: 0.815455183333333

00:15:48.353 --> 00:15:50.179 different types of interventions.

NOTE Confidence: 0.815455183333333

00:15:50.180 --> 00:15:55.876 And really this doesn't just apply to robots.

NOTE Confidence: 0.815455183333333

00:15:55.880 --> 00:15:57.776 Technologies in general can carry more

NOTE Confidence: 0.815455183333333

00:15:57.776 --> 00:15:59.619 of these active ingredients of therapy,

NOTE Confidence: 0.815455183333333

00:15:59.620 --> 00:16:02.080 which is the question of how do we do it.

NOTE Confidence: 0.815455183333333

00:16:02.080 --> 00:16:03.879 So another type of platform that we

NOTE Confidence: 0.815455183333333

00:16:03.879 --> 00:16:05.849 can think of as perhaps inherently

NOTE Confidence: 0.815455183333333

00:16:05.849 --> 00:16:07.754 motivating to children with autism,

NOTE Confidence: 0.815455183333333

00:16:07.760 --> 00:16:09.600 individuals with autism in general,

NOTE Confidence: 0.815455183333333

00:16:09.600 --> 00:16:10.923 are video games.

NOTE Confidence: 0.815455183333333

00:16:10.923 --> 00:16:15.255 And so there is now a lot of evidence

NOTE Confidence: 0.815455183333333

00:16:15.255 --> 00:16:18.716 to suggest that video games that are

NOTE Confidence: 0.815455183333333

00:16:18.716 --> 00:16:21.350 intended for the purpose of remediation

NOTE Confidence: 0.815455183333333

27

00:16:21.431 --> 00:16:24.342 of skills or psychosocial education,

NOTE Confidence: 0.815455183333333

00:16:24.342 --> 00:16:28.947 or specific addressing of areas

NOTE Confidence: 0.815455183333333

00:16:28.947 --> 00:16:32.169 of of areas of performance that

NOTE Confidence: 0.815455183333333

00:16:32.169 --> 00:16:34.310 individuals with autism have,

NOTE Confidence: 0.815455183333333

00:16:34.310 --> 00:16:36.920 that these serious schemes can

NOTE Confidence: 0.815455183333333

00:16:36.920 --> 00:16:39.530 provide some type of improvement.

NOTE Confidence: 0.815455183333333

00:16:39.530 --> 00:16:40.682 And here's just the.

NOTE Confidence: 0.815455183333333

00:16:40.682 --> 00:16:43.629 Kind of a panel of a few different examples

NOTE Confidence: 0.815455183333333

00:16:43.629 --> 00:16:47.208 and so for instance on the left we have a a,

NOTE Confidence: 0.815455183333333

00:16:47.210 --> 00:16:50.702 a face, a face processing and

NOTE Confidence: 0.815455183333333

00:16:50.702 --> 00:16:53.030 face information processing game.

NOTE Confidence: 0.815455183333333

00:16:53.030 --> 00:16:56.030 And. And.

NOTE Confidence: 0.815455183333333

00:16:56.030 --> 00:16:58.809 We see positive gains in the SRS.

NOTE Confidence: 0.815455183333333

00:16:58.810 --> 00:17:02.919 This is also a randomized control trial.

NOTE Confidence: 0.815455183333333

00:17:02.920 --> 00:17:06.997 See positive gains in the in the s s,

NOTE Confidence: 0.815455183333333

00:17:07.000 --> 00:17:10.060 two parent totals T scores as

NOTE Confidence: 0.815455183333333

00:17:10.060 --> 00:17:12.928 compared to in the experimental.

NOTE Confidence: 0.815455183333333

00:17:12.928 --> 00:17:16.240 You know, randomized to.

NOTE Confidence: 0.815455183333333

00:17:16.240 --> 00:17:18.280 Randomized to this this face face,

NOTE Confidence: 0.815455183333333

00:17:18.280 --> 00:17:21.927 say training game as compared to the

NOTE Confidence: 0.815455183333333

00:17:21.927 --> 00:17:25.718 control group who was basically given a.

NOTE Confidence: 0.815455183333333

00:17:25.720 --> 00:17:30.780 A drawing activity on a on a on a tablet.

NOTE Confidence: 0.815455183333333

00:17:30.780 --> 00:17:31.170 And.

NOTE Confidence: 0.815455183333333

00:17:31.170 --> 00:17:32.340 Here's another example.

NOTE Confidence: 0.815455183333333

00:17:32.340 --> 00:17:34.680 This is a connect video game

NOTE Confidence: 0.815455183333333

00:17:34.750 --> 00:17:36.940 where actually there is a mouse.

NOTE Confidence: 0.815455183333333

00:17:36.940 --> 00:17:37.618 OK great,

NOTE Confidence: 0.815455183333333

00:17:37.618 --> 00:17:39.652 a connect video game which really

NOTE Confidence: 0.815455183333333

00:17:39.652 --> 00:17:41.399 focuses on a lot of joints,

NOTE Confidence: 0.815455183333333

00:17:41.400 --> 00:17:44.478 play skills and single subject design.

NOTE Confidence: 0.815455183333333

00:17:44.480 --> 00:17:46.455 Showing good improvements in performance

NOTE Confidence: 0.815455183333333

00:17:46.455 --> 00:17:49.554 of the task was meant so that the

NOTE Confidence: 0.815455183333333

00:17:49.554 --> 00:17:51.309 the performance would increase as

NOTE Confidence: 0.815455183333333

00:17:51.309 --> 00:17:53.606 they were able to accomplish more and

NOTE Confidence: 0.815455183333333

00:17:53.606 --> 00:17:56.792 more of the tasks in the in the game.

NOTE Confidence: 0.815455183333333

00:17:56.792 --> 00:17:59.270 And this is a whoops this.

NOTE Confidence: 0.815455183333333

00:17:59.270 --> 00:18:02.707 Is a more recent report by Jason

NOTE Confidence: 0.815455183333333

00:18:02.707 --> 00:18:05.546 Griffin and Suzanne Scherff and Jason

NOTE Confidence: 0.815455183333333

00:18:05.546 --> 00:18:09.090 I don't know if Jason is is here.

NOTE Confidence: 0.815455183333333

00:18:09.090 --> 00:18:10.530 Jason good to see you.

NOTE Confidence: 0.815455183333333

00:18:10.530 --> 00:18:12.900 But I specifically put this into

NOTE Confidence: 0.815455183333333

00:18:12.900 --> 00:18:15.584 to highlight what an awesome job he

NOTE Confidence: 0.815455183333333

00:18:15.584 --> 00:18:18.258 did on this study and you know this

NOTE Confidence: 0.815455183333333

00:18:18.258 --> 00:18:21.538 is this is I think one of the first

NOTE Confidence: 0.815455183333333

00:18:21.538 --> 00:18:23.535 examples of using a serious game.

NOTE Confidence: 0.815455183333333

00:18:23.535 --> 00:18:25.065 We call them serious games because

NOTE Confidence: 0.815455183333333

00:18:25.065 --> 00:18:26.851 the goal isn't to just have fun the

NOTE Confidence: 0.815455183333333

00:18:26.851 --> 00:18:28.591 game the goal is to provide some

NOTE Confidence: 0.815455183333333

00:18:28.591 --> 00:18:32.670 therapeutic or some. Alternative gain.

NOTE Confidence: 0.815455183333333

00:18:32.670 --> 00:18:35.302 It's one of the first examples to

NOTE Confidence: 0.815455183333333

00:18:35.302 --> 00:18:37.758 show that the application of of

NOTE Confidence: 0.815455183333333

00:18:37.758 --> 00:18:40.670 these games can lead to changes in

NOTE Confidence: 0.912591203181818

00:18:40.750 --> 00:18:44.052 just basic attention in in

NOTE Confidence: 0.912591203181818

00:18:44.052 --> 00:18:47.388 terms of really important.

NOTE Confidence: 0.912591203181818

00:18:47.390 --> 00:18:50.145 Skills for for focusing on

NOTE Confidence: 0.912591203181818

00:18:50.145 --> 00:18:52.349 gaze correctly at stimuli.

NOTE Confidence: 0.912591203181818

00:18:52.350 --> 00:18:53.958 So really, really.

NOTE Confidence: 0.912591203181818

00:18:53.958 --> 00:18:56.870 You know, a lot of evidence amounting.

NOTE Confidence: 0.912591203181818

00:18:56.870 --> 00:18:59.370 Again, just like with robotics,

NOTE Confidence: 0.912591203181818

00:18:59.370 --> 00:19:00.602 you know, ten years ago I would

NOTE Confidence: 0.912591203181818

00:19:00.602 --> 00:19:01.789 have looked at this literature.

NOTE Confidence: 0.912591203181818

00:19:01.790 --> 00:19:02.700 You could read any review.

NOTE Confidence: 0.912591203181818

00:19:02.700 --> 00:19:03.520 And that review would say,

NOTE Confidence: 0.912591203181818

00:19:03.520 --> 00:19:04.790 like we need more information,

NOTE Confidence: 0.912591203181818

00:19:04.790 --> 00:19:05.828 the data is not good enough,

NOTE Confidence: 0.912591203181818

00:19:05.830 --> 00:19:07.240 the studies are too small and

NOTE Confidence: 0.912591203181818

00:19:07.240 --> 00:19:08.830 that's really not the case anymore.

NOTE Confidence: 0.912591203181818

00:19:08.830 --> 00:19:11.574 We're really seeing kind of a robust

NOTE Confidence: 0.912591203181818

00:19:11.574 --> 00:19:13.800 literature now with meta analysis,

NOTE Confidence: 0.912591203181818

00:19:13.800 --> 00:19:16.080 really formal mental analysis,

NOTE Confidence: 0.912591203181818

00:19:16.080 --> 00:19:19.280 suggesting that there's these really real,

NOTE Confidence: 0.912591203181818

00:19:19.280 --> 00:19:21.030 there's real utility in deploying

NOTE Confidence: 0.912591203181818

00:19:21.030 --> 00:19:22.430 these serious game interventions.

NOTE Confidence: 0.912591203181818

00:19:22.430 --> 00:19:24.940 The effects are relatively modest.

NOTE Confidence: 0.912591203181818

00:19:24.940 --> 00:19:28.380 G of .42 in this meta analysis of

NOTE Confidence: 0.912591203181818

00:19:28.380 --> 00:19:31.376 11 studies involving 654 children,

NOTE Confidence: 0.912591203181818

00:19:31.376 --> 00:19:33.110 but 654 children,

NOTE Confidence: 0.912591203181818

00:19:33.110 --> 00:19:34.944 this is a really different place than

NOTE Confidence: 0.912591203181818

00:19:34.944 --> 00:19:36.857 we were five years ago and certainly

NOTE Confidence: 0.912591203181818

00:19:36.857 --> 00:19:38.730 10 years ago where we would see,

NOTE Confidence: 0.912591203181818

00:19:38.730 --> 00:19:39.200 you know,

NOTE Confidence: 0.912591203181818

00:19:39.200 --> 00:19:40.610 maybe if we were to count

NOTE Confidence: 0.912591203181818

00:19:40.610 --> 00:19:41.880 up everyone added together,

NOTE Confidence: 0.912591203181818

00:19:41.880 --> 00:19:44.436 you might see like 80 people.

NOTE Confidence: 0.912591203181818

00:19:44.440 --> 00:19:44.753 So,

NOTE Confidence: 0.912591203181818

00:19:44.753 --> 00:19:46.631 so that that's really impressive now

NOTE Confidence: 0.912591203181818

00:19:46.631 --> 00:19:49.168 that we have this idea that that these

NOTE Confidence: 0.912591203181818

00:19:49.168 --> 00:19:51.300 are things that can really work now,

NOTE Confidence: 0.912591203181818

00:19:51.300 --> 00:19:53.148 the next hurdle that we're going to

NOTE Confidence: 0.912591203181818

00:19:53.148 --> 00:19:55.238 go through in terms of understanding.

NOTE Confidence: 0.912591203181818

00:19:55.240 --> 00:19:57.454 How to where to go with these video games

NOTE Confidence: 0.912591203181818

00:19:57.454 --> 00:19:59.505 is how do we actually develop these

NOTE Confidence: 0.912591203181818

00:19:59.505 --> 00:20:01.788 video games so that they are effective.

NOTE Confidence: 0.912591203181818

00:20:01.790 --> 00:20:03.506 And so a recent,

NOTE Confidence: 0.912591203181818

00:20:03.506 --> 00:20:06.080 you know these these two studies

NOTE Confidence: 0.912591203181818

00:20:06.167 --> 00:20:07.810 came out at kind of a little

NOTE Confidence: 0.912591203181818

00:20:07.810 --> 00:20:08.830 bit far apart from each other.

NOTE Confidence: 0.912591203181818

00:20:08.830 --> 00:20:12.250 But this this second study here

NOTE Confidence: 0.912591203181818

00:20:12.250 --> 00:20:14.634 focused on kind of a slightly

NOTE Confidence: 0.912591203181818

00:20:14.634 --> 00:20:16.500 different set of games but focused

NOTE Confidence: 0.912591203181818

00:20:16.566 --> 00:20:18.869 more on what are the components that

NOTE Confidence: 0.912591203181818

00:20:18.869 --> 00:20:20.613 are associated with these positive

NOTE Confidence: 0.912591203181818

00:20:20.613 --> 00:20:23.042 gains and what they found was that

NOTE Confidence: 0.912591203181818

00:20:23.042 --> 00:20:25.260 adherence to what they call social.

NOTE Confidence: 0.912591203181818

00:20:25.260 --> 00:20:26.193 Serious game principles,

NOTE Confidence: 0.912591203181818

00:20:26.193 --> 00:20:26.504 right?

NOTE Confidence: 0.912591203181818

00:20:26.504 --> 00:20:28.696 These are these rules of how do

NOTE Confidence: 0.912591203181818

00:20:28.696 --> 00:20:30.298 you build a game that's engaging,

NOTE Confidence: 0.912591203181818

00:20:30.300 --> 00:20:35.508 that will actually challenge the child?

34

00:20:35.510 --> 00:20:37.910 Adherence to these rules was,

00:20:37.910 --> 00:20:38.650 you know,

00:20:38.650 --> 00:20:40.500 perhaps not unexpectedly associated with

00:20:40.500 --> 00:20:43.087 how well these these systems would work.

00:20:43.090 --> 00:20:45.586 And so we're starting to get some information

00:20:45.586 --> 00:20:47.770 about what are the active ingredients.

00:20:47.770 --> 00:20:49.630 And it's important to note though,

00:20:49.630 --> 00:20:50.990 that there is of course,

00:20:50.990 --> 00:20:52.886 from the other side of things,

00:20:52.890 --> 00:20:55.914 this really well known series of

00:20:55.914 --> 00:20:58.477 findings that video games can

00:20:58.477 --> 00:21:01.237 be actually a source of concern

00:21:01.237 --> 00:21:04.384 and difficulty in terms of play

00:21:04.384 --> 00:21:06.616 until obsessive play excessive.

00:21:06.620 --> 00:21:08.772 And so these kind of serious game principles

00:21:08.772 --> 00:21:10.719 have to be balanced against those,

NOTE Confidence: 0.912591203181818

00:21:10.720 --> 00:21:13.030 those critical and unique characteristics

NOTE Confidence: 0.912591203181818

00:21:13.030 --> 00:21:16.012 of individuals with autism as we think

NOTE Confidence: 0.912591203181818

00:21:16.012 --> 00:21:18.133 about how we want to deploy them.

NOTE Confidence: 0.912591203181818

00:21:18.140 --> 00:21:18.520 Now.

NOTE Confidence: 0.912591203181818

00:21:18.520 --> 00:21:20.040 Thinking about video games,

NOTE Confidence: 0.912591203181818

00:21:20.040 --> 00:21:21.522 of course brings us into kind

NOTE Confidence: 0.912591203181818

00:21:21.522 --> 00:21:23.232 of this wider space of thinking

NOTE Confidence: 0.912591203181818

00:21:23.232 --> 00:21:25.230 about all these different types of

NOTE Confidence: 0.912591203181818

00:21:25.230 --> 00:21:26.753 mobile applications that can be

NOTE Confidence: 0.912591203181818

00:21:26.753 --> 00:21:28.355 leveraged in order to promote skill

NOTE Confidence: 0.912591203181818

00:21:28.355 --> 00:21:30.470 gains in individuals with autism.

NOTE Confidence: 0.912591203181818

00:21:30.470 --> 00:21:32.770 And the most obvious interactive

NOTE Confidence: 0.912591203181818

00:21:32.770 --> 00:21:35.179 technology is perhaps one of the

NOTE Confidence: 0.912591203181818

00:21:35.179 --> 00:21:36.679 oldest technologies which are.

NOTE Confidence: 0.912591203181818

00:21:36.680 --> 00:21:38.396 Our augmentative and alternative

NOTE Confidence: 0.912591203181818

00:21:38.396 --> 00:21:40.541 communication systems and this is

NOTE Confidence: 0.912591203181818

00:21:40.541 --> 00:21:43.179 just an example of a simple speech

NOTE Confidence: 0.912591203181818

00:21:43.179 --> 00:21:44.607 generating device per loquito

NOTE Confidence: 0.78128551

00:21:44.668 --> 00:21:47.155 go. It's probably the most successful

NOTE Confidence: 0.78128551

00:21:47.155 --> 00:21:49.460 AC digital system out there.

NOTE Confidence: 0.78128551

00:21:49.460 --> 00:21:53.817 And again, you know the knowledge

NOTE Confidence: 0.78128551

00:21:53.817 --> 00:21:56.316 that we have about these systems has

NOTE Confidence: 0.78128551

00:21:56.316 --> 00:21:57.931 just really increased tremendously

NOTE Confidence: 0.78128551

00:21:57.931 --> 00:22:00.427 over these last last few years.

NOTE Confidence: 0.78128551

00:22:00.430 --> 00:22:04.453 This study I like a lot involves 9 single

NOTE Confidence: 0.78128551

00:22:04.453 --> 00:22:08.308 case studies involving n = 36 children,

NOTE Confidence: 0.78128551

00:22:08.310 --> 00:22:10.538 which is, you know,

NOTE Confidence: 0.78128551

00:22:10.538 --> 00:22:12.766 relatively modest but the.

NOTE Confidence: 0.78128551

00:22:12.770 --> 00:22:15.752 But the take away from this

NOTE Confidence: 0.78128551

00:22:15.752 --> 00:22:18.679 really kind of spoke to what?

NOTE Confidence: 0.78128551

00:22:18.680 --> 00:22:20.900 Is unique about these technology

NOTE Confidence: 0.78128551

00:22:20.900 --> 00:22:23.594 based AAC systems which is that

NOTE Confidence: 0.78128551

00:22:23.594 --> 00:22:25.982 most of the participants who were

NOTE Confidence: 0.78128551

00:22:25.982 --> 00:22:28.538 in this cohort preferred the SG,

NOTE Confidence: 0.78128551

00:22:28.540 --> 00:22:30.496 these speech generating devices,

NOTE Confidence: 0.78128551

00:22:30.496 --> 00:22:32.941 these digital speech generating devices

NOTE Confidence: 0.78128551

00:22:32.941 --> 00:22:35.649 but also performed better as compared

NOTE Confidence: 0.78128551

00:22:35.649 --> 00:22:38.166 to standard picture exchange with the

NOTE Confidence: 0.78128551

00:22:38.166 --> 00:22:40.245 cards and as well as manual sign.

NOTE Confidence: 0.78128551

00:22:40.250 --> 00:22:46.474 A more recent study that came out

NOTE Confidence: 0.78128551

00:22:46.474 --> 00:22:48.766 recently was actually a meta analysis.

NOTE Confidence: 0.78128551

00:22:48.770 --> 00:22:55.080 Of a much larger cohort and.

NOTE Confidence: 0.78128551

00:22:55.080 --> 00:22:56.560 I forget the total number,

NOTE Confidence: 0.78128551

00:22:56.560 --> 00:22:58.884 but there was I think 114 participants

NOTE Confidence: 0.78128551

00:22:58.884 --> 00:23:01.236 and largely found the same types

NOTE Confidence: 0.78128551

00:23:01.236 --> 00:23:03.392 of results that that there seems

NOTE Confidence: 0.78128551

00:23:03.392 --> 00:23:05.978 to be some type of advantage for

NOTE Confidence: 0.78128551

00:23:05.978 --> 00:23:08.198 augmentative these digital augmentative

NOTE Confidence: 0.78128551

00:23:08.198 --> 00:23:10.418 alternative communication systems so

NOTE Confidence: 0.78128551

00:23:10.418 --> 00:23:14.274 that that particular meta analysis

NOTE Confidence: 0.78128551

00:23:14.274 --> 00:23:16.609 didn't distinguish between what they

NOTE Confidence: 0.78128551

00:23:16.609 --> 00:23:19.289 called low tech versus high tech.

NOTE Confidence: 0.78128551

00:23:19.290 --> 00:23:21.530 AC systems.

NOTE Confidence: 0.78128551

00:23:21.530 --> 00:23:24.506 Now I think one of the most compelling.

NOTE Confidence: 0.78128551

00:23:24.510 --> 00:23:27.294 Pieces of evidence about the unique

NOTE Confidence: 0.78128551

00:23:27.294 --> 00:23:30.235 nature of these digital AC systems,

NOTE Confidence: 0.78128551

00:23:30.235 --> 00:23:32.810 and AC systems in general,

NOTE Confidence: 0.78128551

00:23:32.810 --> 00:23:35.126 comes from the work from Connie

NOTE Confidence: 0.78128551

00:23:35.126 --> 00:23:37.129 Kasari and colleagues looking at

NOTE Confidence: 0.78128551

00:23:37.129 --> 00:23:39.481 the impact of including a speech

NOTE Confidence: 0.78128551

00:23:39.481 --> 00:23:41.727 generating device together with a

NOTE Confidence: 0.78128551

39

00:23:41.727 --> 00:23:43.227 naturalistic developmental behavioral

NOTE Confidence: 0.78128551

00:23:43.227 --> 00:23:45.727 intervention in children with ASD.

NOTE Confidence: 0.78128551

00:23:45.730 --> 00:23:47.998 And it was a it was a well powered

NOTE Confidence: 0.78128551

00:23:47.998 --> 00:23:49.269 randomized controlled trial,

NOTE Confidence: 0.78128551

00:23:49.270 --> 00:23:52.145 30 children who were basically

NOTE Confidence: 0.78128551

00:23:52.145 --> 00:23:54.445 given the enhancement blue.

NOTE Confidence: 0.78128551

00:23:54.450 --> 00:23:57.540 Winning plus Jasper and then 31

NOTE Confidence: 0.78128551

00:23:57.540 --> 00:23:59.808 children who were given the same thing

NOTE Confidence: 0.78128551

00:23:59.808 --> 00:24:01.967 except with a speech generating device

NOTE Confidence: 0.78128551

00:24:01.967 --> 00:24:04.585 and the the critical thing that you

NOTE Confidence: 0.78128551

00:24:04.649 --> 00:24:07.442 can see here this is total social

NOTE Confidence: 0.78128551

00:24:07.442 --> 00:24:09.754 communicative utterances shown on the

NOTE Confidence: 0.78128551

00:24:09.754 --> 00:24:13.653 Y axis that overtime that's the the.

NOTE Confidence: 0.78128551

00:24:13.660 --> 00:24:16.228 You know the.

NOTE Confidence: 0.78128551

00:24:16.230 --> 00:24:18.828 The group without the speech generating

NOTE Confidence: 0.78128551

00:24:18.828 --> 00:24:20.127 device essentially increases,

NOTE Confidence: 0.78128551

00:24:20.130 --> 00:24:22.270 improves as we would expect,

NOTE Confidence: 0.78128551

00:24:22.270 --> 00:24:25.582 but the gains that we see in the

NOTE Confidence: 0.78128551

00:24:25.582 --> 00:24:27.397 speech generating device group

NOTE Confidence: 0.78128551

00:24:27.397 --> 00:24:30.533 are much are much larger at the

NOTE Confidence: 0.78128551

00:24:30.533 --> 00:24:32.640 beginning though they end up.

NOTE Confidence: 0.78128551

00:24:32.640 --> 00:24:34.980 But Connie Cassari is is is a quick to

NOTE Confidence: 0.78128551

00:24:34.980 --> 00:24:37.428 note that they end up at the same place.

NOTE Confidence: 0.78128551

00:24:37.430 --> 00:24:37.830 So.

NOTE Confidence: 0.78128551

00:24:37.830 --> 00:24:40.630 So there are some gains in terms

NOTE Confidence: 0.78128551

00:24:40.630 --> 00:24:44.113 of the speed at which learning is

NOTE Confidence: 0.78128551

00:24:44.113 --> 00:24:46.530 taking place by the incorporation

NOTE Confidence: 0.78128551

00:24:46.530 --> 00:24:48.830 of these speech generating devices.

NOTE Confidence: 0.78128551

00:24:48.830 --> 00:24:49.242 You know,

NOTE Confidence: 0.78128551

00:24:49.242 --> 00:24:50.890 I think that we'd all love to see

NOTE Confidence: 0.78128551

00:24:50.942 --> 00:24:52.402 more information about this and

NOTE Confidence: 0.78128551

00:24:52.402 --> 00:24:54.225 try to really understand what are

NOTE Confidence: 0.78128551

00:24:54.225 --> 00:24:55.453 the fundamental mechanisms that

NOTE Confidence: 0.78128551

00:24:55.453 --> 00:24:57.332 are underlying this boost in in

NOTE Confidence: 0.78128551

00:24:57.332 --> 00:24:59.384 learning and perhaps maybe we can

NOTE Confidence: 0.78128551

00:24:59.384 --> 00:25:01.958 even make this more effective we can.

NOTE Confidence: 0.78128551

00:25:01.960 --> 00:25:04.156 Maybe even cut off the intervention

NOTE Confidence: 0.78128551

00:25:04.156 --> 00:25:05.620 shorter in this way.

NOTE Confidence: 0.78128551

00:25:05.620 --> 00:25:07.755 So some when we think about these

NOTE Confidence: 0.78128551

00:25:07.755 --> 00:25:10.119 advantages that are appearing it's you know,

NOTE Confidence: 0.78128551

00:25:10.120 --> 00:25:12.990 it's one thing to think about the

NOTE Confidence: 0.78128551

00:25:12.990 --> 00:25:15.059 inherent increased interest as a

NOTE Confidence: 0.78128551

00:25:15.059 --> 00:25:16.591 catalyst for increased engagement

NOTE Confidence: 0.78128551

00:25:16.591 --> 00:25:19.842 which leads to you know as we know

NOTE Confidence: 0.78128551

00:25:19.842 --> 00:25:21.897 greater efficacy in treatment response.

NOTE Confidence: 0.78128551

00:25:21.900 --> 00:25:23.442 But it's also another to think

NOTE Confidence: 0.78128551

00:25:23.442 --> 00:25:24.470 of perhaps that there

NOTE Confidence: 0.836457908

00:25:24.525 --> 00:25:26.160 are specific types of mechanisms,

NOTE Confidence: 0.836457908

00:25:26.160 --> 00:25:27.417 specific ways that.

NOTE Confidence: 0.836457908

00:25:27.417 --> 00:25:29.931 Children with autism may think that

NOTE Confidence: 0.836457908

00:25:29.931 --> 00:25:32.989 may lend themselves to technologies and

NOTE Confidence: 0.836457908

00:25:32.989 --> 00:25:35.549 especially these really visual these

NOTE Confidence: 0.836457908

00:25:35.623 --> 00:25:38.003 stimulating technologies like tablets and

NOTE Confidence: 0.836457908

00:25:38.003 --> 00:25:41.294 mobile or video games and mobile apps.

NOTE Confidence: 0.836457908

00:25:41.294 --> 00:25:44.006 And so one idea comes from

NOTE Confidence: 0.836457908

00:25:44.006 --> 00:25:46.728 actually a host of literature,

NOTE Confidence: 0.836457908

00:25:46.730 --> 00:25:49.010 but I think that's my colleague Kunda and

NOTE Confidence: 0.836457908

00:25:49.010 --> 00:25:50.625 Ashok goal actually really summarized

NOTE Confidence: 0.836457908

00:25:50.625 --> 00:25:52.928 this and kind of a formal theory,

NOTE Confidence: 0.836457908

00:25:52.930 --> 00:25:55.138 this idea that many more many

NOTE Confidence: 0.836457908

00:25:55.138 --> 00:25:57.460 children with autism are much more

NOTE Confidence: 0.836457908

00:25:57.460 --> 00:25:59.405 visual learners than they are.

NOTE Confidence: 0.836457908

00:25:59.410 --> 00:26:02.450 Certainly auditory learners right there,

NOTE Confidence: 0.836457908

00:26:02.450 --> 00:26:04.014 they're particular learning style

NOTE Confidence: 0.836457908

00:26:04.014 --> 00:26:06.861 is really one that may deal with

NOTE Confidence: 0.836457908

00:26:06.861 --> 00:26:08.160 very concrete imagery.

NOTE Confidence: 0.836457908

00:26:08.160 --> 00:26:10.776 And so we can leverage this to think

NOTE Confidence: 0.836457908

00:26:10.776 --> 00:26:12.625 about other strategies in which

NOTE Confidence: 0.836457908

00:26:12.625 --> 00:26:15.010 we can take this perhaps natural

NOTE Confidence: 0.836457908

00:26:15.010 --> 00:26:17.050 predisposition towards visual thinking

NOTE Confidence: 0.836457908

00:26:17.050 --> 00:26:20.260 and apply this to app development

NOTE Confidence: 0.836457908

00:26:20.260 --> 00:26:22.600 to address specific skills.

NOTE Confidence: 0.836457908

00:26:22.600 --> 00:26:24.718 This is a project called speech

NOTE Confidence: 0.836457908

00:26:24.718 --> 00:26:26.534 prompts that was launched together

NOTE Confidence: 0.836457908

00:26:26.534 --> 00:26:28.914 with the Real Paul and Liz Simmons.

NOTE Confidence: 0.836457908

00:26:28.920 --> 00:26:29.430 Liz Simmons.

NOTE Confidence: 0.836457908

00:26:29.430 --> 00:26:31.215 He was the one who was the,

NOTE Confidence: 0.836457908

00:26:31.220 --> 00:26:32.798 the, the I would say she,

NOTE Confidence: 0.836457908

00:26:32.800 --> 00:26:35.140 she was she was the boss of the study

NOTE Confidence: 0.836457908

00:26:35.140 --> 00:26:36.756 and incredible incredible thinker

NOTE Confidence: 0.836457908

00:26:36.756 --> 00:26:40.165 about how we could design apps and.

NOTE Confidence: 0.836457908

00:26:40.165 --> 00:26:43.120 I think the.

NOTE Confidence: 0.836457908

00:26:43.120 --> 00:26:45.298 Purpose of speech prompts this program

NOTE Confidence: 0.836457908

00:26:45.298 --> 00:26:47.540 speech prompts was to address pros

NOTE Confidence: 0.836457908

00:26:47.540 --> 00:26:49.718 the issues in children with autism.

NOTE Confidence: 0.836457908

00:26:49.720 --> 00:26:51.232 Prosody being the way that you say

NOTE Confidence: 0.836457908

00:26:51.232 --> 00:26:52.434 something and so perhaps you're

NOTE Confidence: 0.836457908

00:26:52.434 --> 00:26:53.704 speaking too loud you're speaking

NOTE Confidence: 0.836457908

00:26:53.704 --> 00:26:55.342 too much in a monotone kind of

NOTE Confidence: 0.836457908

00:26:55.342 --> 00:26:56.377 like I'm doing right now.

NOTE Confidence: 0.836457908

00:26:56.380 --> 00:26:57.965 It's like the heads nodding

NOTE Confidence: 0.836457908

00:26:57.965 --> 00:26:59.233 I'm sorry about that.

NOTE Confidence: 0.836457908

00:26:59.240 --> 00:27:03.320 That's just the way I speak the

NOTE Confidence: 0.836457908

00:27:03.320 --> 00:27:06.295 OR or maybe you're it's it's too

NOTE Confidence: 0.836457908

00:27:06.295 --> 00:27:09.023 excessive you might be using too

NOTE Confidence: 0.836457908

00:27:09.023 --> 00:27:10.990 much inflection and so speech

NOTE Confidence: 0.836457908

00:27:10.990 --> 00:27:13.090 prop was really meant to take.

NOTE Confidence: 0.836457908

00:27:13.090 --> 00:27:15.743 These concepts that like how how would

NOTE Confidence: 0.836457908

00:27:15.743 --> 00:27:17.900 you teach someone that you know?

NOTE Confidence: 0.836457908

00:27:17.900 --> 00:27:19.300 The pitch is too high.

NOTE Confidence: 0.836457908

00:27:19.300 --> 00:27:20.050 You give examples.

NOTE Confidence: 0.836457908

00:27:20.050 --> 00:27:21.300 What if you don't really,

NOTE Confidence: 0.836457908

00:27:21.300 --> 00:27:22.800 you can't really hear those books,

NOTE Confidence: 0.836457908

00:27:22.800 --> 00:27:23.027 right?

NOTE Confidence: 0.836457908

00:27:23.027 --> 00:27:24.616 Like that's the whole problem is that

NOTE Confidence: 0.836457908

00:27:24.616 --> 00:27:26.375 you don't hear it in the same way

NOTE Confidence: 0.836457908

00:27:26.375 --> 00:27:27.494 that a neurotypical would, right?

NOTE Confidence: 0.836457908

00:27:27.494 --> 00:27:29.412 And so this really exists as an

NOTE Confidence: 0.836457908

00:27:29.412 --> 00:27:31.157 alternative way to visualize these

NOTE Confidence: 0.836457908

00:27:31.157 --> 00:27:32.606 really difficult concepts, right?

NOTE Confidence: 0.836457908

00:27:32.606 --> 00:27:34.442 To take things that are very

NOTE Confidence: 0.836457908

00:27:34.442 --> 00:27:35.692 ephemeral in nature, right?

NOTE Confidence: 0.836457908

00:27:35.692 --> 00:27:37.020 Like this, this utterance,

NOTE Confidence: 0.836457908

00:27:37.020 --> 00:27:39.694 a sound way that we speak very

NOTE Confidence: 0.836457908

00:27:39.694 --> 00:27:41.320 short lasting and time.

NOTE Confidence: 0.836457908

00:27:41.320 --> 00:27:42.464 And to give it a concrete form to

NOTE Confidence: 0.836457908

00:27:42.464 --> 00:27:43.978 give it something that you could point to,

NOTE Confidence: 0.836457908

00:27:43.980 --> 00:27:46.332 just give an example that is reproducible

NOTE Confidence: 0.836457908

00:27:46.332 --> 00:27:48.840 that the child can also participate in.

NOTE Confidence: 0.836457908

00:27:48.840 --> 00:27:49.893 Himself or herself,

NOTE Confidence: 0.836457908

00:27:49.893 --> 00:27:51.548 so that they, he,

NOTE Confidence: 0.836457908

00:27:51.548 --> 00:27:53.940 he or she can.

NOTE Confidence: 0.836457908

00:27:53.940 --> 00:27:56.075 Experiment with these parameters and

NOTE Confidence: 0.836457908

00:27:56.075 --> 00:27:58.596 learn these mappings on their own

NOTE Confidence: 0.836457908

00:27:58.596 --> 00:28:01.124 using the set of technologies as an aid.

NOTE Confidence: 0.836457908

00:28:01.130 --> 00:28:04.186 The result of a kind of a preliminary,

NOTE Confidence: 0.836457908

00:28:04.190 --> 00:28:06.690 pretty small feasibility study involving

NOTE Confidence: 0.836457908

00:28:06.690 --> 00:28:09.190 10 speech language pathologists and

NOTE Confidence: 0.836457908

00:28:09.265 --> 00:28:11.770 40 children special education program,

NOTE Confidence: 0.836457908

00:28:11.770 --> 00:28:13.210 all with prosody difficulties,

NOTE Confidence: 0.836457908

00:28:13.210 --> 00:28:15.010 but not all with autism.

NOTE Confidence: 0.836457908

00:28:15.010 --> 00:28:15.954 I think the majority,

NOTE Confidence: 0.836457908

00:28:15.954 --> 00:28:17.862 about 80% of them had autism,

NOTE Confidence: 0.836457908

00:28:17.862 --> 00:28:20.010 showed really high levels of engagement,

NOTE Confidence: 0.836457908

00:28:20.010 --> 00:28:21.606 compliance and use of the system.

NOTE Confidence: 0.836457908

00:28:21.610 --> 00:28:22.604 And so that was a good thing,

NOTE Confidence: 0.836457908

00:28:22.610 --> 00:28:22.834 right?

NOTE Confidence: 0.836457908

00:28:22.834 --> 00:28:23.954 That's actually the the critical

NOTE Confidence: 0.836457908

00:28:23.954 --> 00:28:24.850 part when you're thinking

NOTE Confidence: 0.778099210769231

00:28:24.887 --> 00:28:25.748 about these technologies.

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NOTE Confidence: 0.778099210769231

00:28:25.750 --> 00:28:27.686 Find them, because if no one's using them,

NOTE Confidence: 0.778099210769231

00:28:27.690 --> 00:28:28.810 then they're not going to work right.

NOTE Confidence: 0.778099210769231

00:28:28.810 --> 00:28:29.488 Like that's the.

NOTE Confidence: 0.778099210769231

00:28:29.488 --> 00:28:31.070 So that that is the first thing

NOTE Confidence: 0.778099210769231

00:28:31.121 --> 00:28:34.620 that you need to measure, and then.

NOTE Confidence: 0.778099210769231

00:28:34.620 --> 00:28:36.580 What the children do is of course important,

NOTE Confidence: 0.778099210769231

00:28:36.580 --> 00:28:38.631 but even more important was that the

NOTE Confidence: 0.778099210769231

00:28:38.631 --> 00:28:39.852 speech language pathologists felt

NOTE Confidence: 0.778099210769231

00:28:39.852 --> 00:28:41.317 very positive about these systems.

NOTE Confidence: 0.778099210769231

00:28:41.320 --> 00:28:44.260 Because even more important than the

NOTE Confidence: 0.778099210769231

00:28:44.260 --> 00:28:46.220 children enjoying themselves are

NOTE Confidence: 0.778099210769231

00:28:46.292 --> 00:28:48.066 that the interventionists think that

NOTE Confidence: 0.778099210769231

00:28:48.066 --> 00:28:50.076 these technologies are of value,

NOTE Confidence: 0.778099210769231

00:28:50.080 --> 00:28:52.439 otherwise these things will not get used.

NOTE Confidence: 0.778099210769231

00:28:52.440 --> 00:28:54.900 In terms of the actual prosodic

NOTE Confidence: 0.778099210769231

00:28:54.900 --> 00:28:57.051 qualities of speech, we saw essentially

NOTE Confidence: 0.778099210769231

00:28:57.051 --> 00:28:58.279 improvements across the board,

NOTE Confidence: 0.778099210769231

00:28:58.280 --> 00:29:02.789 which was exactly what we want to see so.

NOTE Confidence: 0.778099210769231

00:29:02.790 --> 00:29:04.770 So these apps, these apps that

NOTE Confidence: 0.778099210769231

00:29:04.770 --> 00:29:06.090 that capture visual information,

NOTE Confidence: 0.778099210769231

00:29:06.090 --> 00:29:07.158 that are transformative

NOTE Confidence: 0.778099210769231

00:29:07.158 --> 00:29:08.226 of visual information,

NOTE Confidence: 0.778099210769231

00:29:08.230 --> 00:29:10.831 they are of course really powerful,

NOTE Confidence: 0.778099210769231

00:29:10.831 --> 00:29:13.614 but we can even go simpler if we want to

NOTE Confidence: 0.778099210769231

00:29:13.614 --> 00:29:15.469 think about using visual information.

NOTE Confidence: 0.778099210769231

00:29:15.470 --> 00:29:20.685 And here is an example that actually.

NOTE Confidence: 0.778099210769231

00:29:20.690 --> 00:29:23.463 I. I'm going to date myself, right.

NOTE Confidence: 0.778099210769231

00:29:23.463 --> 00:29:23.969 But like,

NOTE Confidence: 0.778099210769231

00:29:23.969 --> 00:29:25.740 I was in middle school at the

NOTE Confidence: 0.778099210769231

00:29:25.802 --> 00:29:27.546 first of these studies, 1986.

NOTE Confidence: 0.778099210769231

00:29:27.546 --> 00:29:29.926 All right, so, so weirdly,

00:29:29.930 --> 00:29:33.098 we've been thinking about this technology,

00:29:33.100 --> 00:29:35.516 which simple technology called

00:29:35.516 --> 00:29:38.128 video modeling for, oh, gosh, 86.

00:29:38.128 --> 00:29:39.341 What is that, 14?

00:29:39.341 --> 00:29:41.396 I don't know, several years,

00:29:41.400 --> 00:29:43.005 30, several decades,

00:29:43.005 --> 00:29:45.680 we'll call it several decades.

00:29:45.680 --> 00:29:45.907 So,

00:29:45.907 --> 00:29:47.723 so long ago that they used these videotapes.

00:29:47.730 --> 00:29:49.758 Do you do you know that you

00:29:49.758 --> 00:29:51.630 guys all know videotapes?

00:29:51.630 --> 00:29:53.622 I'm sad because I know there's some of

00:29:53.622 --> 00:29:55.689 you who have never seen a videotape.

00:29:55.690 --> 00:29:57.562 My daughters made fun of me when they saw,

00:29:57.570 --> 00:29:59.340 saw our collection of videotapes

00:29:59.340 --> 00:30:01.110 that my my mother's house.

NOTE Confidence: 0.778099210769231

00:30:01.110 --> 00:30:04.350 She asked, you know if a.

NOTE Confidence: 0.778099210769231

00:30:04.350 --> 00:30:07.640 If I had a pet dinosaur at that time in US.

NOTE Confidence: 0.778099210769231

00:30:07.640 --> 00:30:11.194 Yeah, I have to admit that I did so, so.

NOTE Confidence: 0.778099210769231

00:30:11.194 --> 00:30:12.690 You know, we've been,

NOTE Confidence: 0.778099210769231

00:30:12.690 --> 00:30:15.219 we've been thinking about this,

NOTE Confidence: 0.778099210769231

00:30:15.219 --> 00:30:17.493 the simple uses of technology using

NOTE Confidence: 0.778099210769231

00:30:17.493 --> 00:30:19.760 technologies for a long time in

NOTE Confidence: 0.778099210769231

00:30:19.760 --> 00:30:21.530 order to leverage this specific

NOTE Confidence: 0.778099210769231

00:30:21.530 --> 00:30:24.071 property of being able to process

NOTE Confidence: 0.778099210769231

00:30:24.071 --> 00:30:26.184 information visually more readily,

NOTE Confidence: 0.778099210769231

00:30:26.184 --> 00:30:28.694 more facilely than in traditional

NOTE Confidence: 0.778099210769231

00:30:28.694 --> 00:30:31.053 ways that that teaching may be done.

NOTE Confidence: 0.778099210769231

00:30:31.060 --> 00:30:34.812 And there's a now a really large body

NOTE Confidence: 0.778099210769231

00:30:34.812 --> 00:30:37.504 of evidence suggesting, you know,

NOTE Confidence: 0.778099210769231

00:30:37.504 --> 00:30:39.618 as we expect that there are some

NOTE Confidence: 0.778099210769231

00:30:39.618 --> 00:30:42.018 really positive gains to be had through.

NOTE Confidence: 0.778099210769231

00:30:42.020 --> 00:30:45.314 Video using using video based modeling

NOTE Confidence: 0.778099210769231

00:30:45.314 --> 00:30:50.010 as compared to traditional traditional.

NOTE Confidence: 0.778099210769231

00:30:50.010 --> 00:30:51.150 Teaching methods,

NOTE Confidence: 0.778099210769231

00:30:51.150 --> 00:30:53.430 but also in combination.

NOTE Confidence: 0.778099210769231

00:30:53.430 --> 00:30:54.582 There's no reason why you have

NOTE Confidence: 0.778099210769231

00:30:54.582 --> 00:30:55.829 to pick one or the other.

NOTE Confidence: 0.778099210769231

00:30:55.830 --> 00:30:58.062 And I'm going to give you also this

NOTE Confidence: 0.778099210769231

00:30:58.062 --> 00:30:59.710 simple example that we did together

NOTE Confidence: 0.778099210769231

00:30:59.710 --> 00:31:01.612 with Ben Popper who is at the

NOTE Confidence: 0.778099210769231

00:31:01.612 --> 00:31:03.122 the Department of Dentistry while

NOTE Confidence: 0.778099210769231

00:31:03.122 --> 00:31:06.906 while I was here at Yale and also

NOTE Confidence: 0.778099210769231

00:31:06.906 --> 00:31:10.770 Kelly Powell and and Fred Volkmar.

NOTE Confidence: 0.778099210769231

00:31:10.770 --> 00:31:12.968 This is just a simple example of

NOTE Confidence: 0.778099210769231

00:31:12.968 --> 00:31:15.656 of of kind of video modeling and

NOTE Confidence: 0.778099210769231

00:31:15.656 --> 00:31:17.741 this was a toothbrushing video

NOTE Confidence: 0.778099210769231

00:31:17.741 --> 00:31:19.839 that was shown to children.

NOTE Confidence: 0.778099210769231

00:31:19.840 --> 00:31:21.930 Basically of over three weeks

NOTE Confidence: 0.778099210769231

00:31:21.930 --> 00:31:24.020 every time the child brushed.

NOTE Confidence: 0.778099210769231

00:31:24.020 --> 00:31:27.446 And Kelly Kelly, are you here?

NOTE Confidence: 0.778099210769231

00:31:27.450 --> 00:31:28.110 No Kelly.

NOTE Confidence: 0.778099210769231

00:31:28.110 --> 00:31:28.770 So Kelly.

NOTE Confidence: 0.778099210769231

00:31:28.770 --> 00:31:31.176 Kelly was the one who told us

NOTE Confidence: 0.778099210769231

00:31:31.176 --> 00:31:33.270 that this actually you know so.

NOTE Confidence: 0.778099210769231

00:31:33.270 --> 00:31:34.758 So this study was a was

NOTE Confidence: 0.778099210769231

00:31:34.758 --> 00:31:35.750 also a controlled trial

NOTE Confidence: 0.823782573636364

00:31:35.812 --> 00:31:38.170 right. So one group of kids received

NOTE Confidence: 0.823782573636364

00:31:38.170 --> 00:31:39.884 this this toothbrushing video and

NOTE Confidence: 0.823782573636364

00:31:39.884 --> 00:31:41.942 another kid was another group of kids

NOTE Confidence: 0.823782573636364

00:31:41.942 --> 00:31:44.320 was asked to watch a controlled video

NOTE Confidence: 0.823782573636364

00:31:44.320 --> 00:31:46.050 involving fractals and some some

NOTE Confidence: 0.823782573636364

00:31:46.050 --> 00:31:48.786 sound almost like it was meditative.

NOTE Confidence: 0.823782573636364

00:31:48.790 --> 00:31:51.212 And and what we see here is

NOTE Confidence: 0.823782573636364

00:31:51.212 --> 00:31:53.897 the the week week one week two,

NOTE Confidence: 0.823782573636364

00:31:53.900 --> 00:31:55.685 week three and the plaque index is

NOTE Confidence: 0.823782573636364

00:31:55.685 --> 00:31:57.866 shown on the Y index and you can just.

NOTE Confidence: 0.823782573636364

00:31:57.870 --> 00:32:00.090 See this kind of strong structure

NOTE Confidence: 0.823782573636364

00:32:00.090 --> 00:32:02.500 that's appears in this toothbrushing

NOTE Confidence: 0.823782573636364

00:32:02.500 --> 00:32:05.265 video presentation at as compared

NOTE Confidence: 0.823782573636364

00:32:05.265 --> 00:32:07.477 to the fractal movie.

NOTE Confidence: 0.823782573636364

00:32:07.480 --> 00:32:10.036 And the reason why I want to highlight this

NOTE Confidence: 0.823782573636364

00:32:10.036 --> 00:32:12.799 is that if you if you look at these right,

NOTE Confidence: 0.823782573636364

00:32:12.800 --> 00:32:15.933 this is a simple one minute video, right.

NOTE Confidence: 0.823782573636364

00:32:15.933 --> 00:32:18.124 And Kelly Powell at the time conveyed

NOTE Confidence: 0.823782573636364

00:32:18.124 --> 00:32:20.917 to us that one of the parents in the

NOTE Confidence: 0.823782573636364

00:32:20.917 --> 00:32:23.692 study after being through this was was

NOTE Confidence: 0.823782573636364

00:32:23.692 --> 00:32:26.191 in the experimental arm acknowledged

NOTE Confidence: 0.823782573636364

00:32:26.191 --> 00:32:28.146 that she basically she said.

NOTE Confidence: 0.823782573636364

00:32:28.150 --> 00:32:29.398 You saved my life.

NOTE Confidence: 0.823782573636364

00:32:29.398 --> 00:32:32.547 This was such a a big ordeal for us

NOTE Confidence: 0.823782573636364

00:32:32.547 --> 00:32:34.935 every night and this really helped

NOTE Confidence: 0.823782573636364

00:32:34.935 --> 00:32:37.677 us get through and learn how to.

NOTE Confidence: 0.823782573636364

00:32:37.680 --> 00:32:39.840 Get through brushing without incident.

NOTE Confidence: 0.823782573636364

00:32:39.840 --> 00:32:42.072 And so I mean we think about these as

NOTE Confidence: 0.823782573636364

00:32:42.072 --> 00:32:43.901 kind of like a a trivial exercises,

NOTE Confidence: 0.823782573636364

00:32:43.901 --> 00:32:44.228 right?

NOTE Confidence: 0.823782573636364

00:32:44.228 --> 00:32:46.940 Like this is a simple thing to do as

NOTE Confidence: 0.823782573636364

00:32:46.940 --> 00:32:48.538 as you can imagine running an actual

NOTE Confidence: 0.823782573636364

00:32:48.538 --> 00:32:50.480 study is of course more work than, than,

NOTE Confidence: 0.823782573636364

00:32:50.480 --> 00:32:53.000 than it looks like from the outside,

NOTE Confidence: 0.823782573636364

00:32:53.000 --> 00:32:56.756 but in terms of just small.

NOTE Confidence: 0.823782573636364

00:32:56.760 --> 00:32:59.376 Types of studies that we do,

NOTE Confidence: 0.823782573636364

00:32:59.380 --> 00:33:02.996 small activities that we can do that can

NOTE Confidence: 0.823782573636364

00:33:02.996 --> 00:33:05.252 elicit real gains in a family's well-being.

NOTE Confidence: 0.823782573636364

00:33:05.252 --> 00:33:06.624 I mean I think that these are

NOTE Confidence: 0.823782573636364

00:33:06.624 --> 00:33:07.784 the exactly the types of things

NOTE Confidence: 0.823782573636364

00:33:07.784 --> 00:33:09.039 that we should be doing more of.

NOTE Confidence: 0.823782573636364

00:33:09.040 --> 00:33:10.840 And in fact if we go out and go to

NOTE Confidence: 0.823782573636364

00:33:10.894 --> 00:33:13.155 YouTube and you start searching for all

NOTE Confidence: 0.823782573636364

00:33:13.155 --> 00:33:14.920 these different types of activities,

NOTE Confidence: 0.823782573636364

00:33:14.920 --> 00:33:15.937 for instance toileting,

NOTE Confidence: 0.823782573636364

00:33:15.937 --> 00:33:18.766 toileting is of course one of the the

NOTE Confidence: 0.823782573636364

00:33:18.766 --> 00:33:21.204 really difficult areas for for some

NOTE Confidence: 0.823782573636364

00:33:21.204 --> 00:33:23.259 families with children with autism,

NOTE Confidence: 0.823782573636364

00:33:23.260 --> 00:33:25.140 you will find a lot of these different

NOTE Confidence: 0.823782573636364

00:33:25.140 --> 00:33:27.025 content and the the problem that we have.

NOTE Confidence: 0.823782573636364

00:33:27.030 --> 00:33:29.878 It's not that that's the content isn't out

NOTE Confidence: 0.823782573636364

57

00:33:29.878 --> 00:33:31.405 there. It's one of the logistics, right?

NOTE Confidence: 0.823782573636364

00:33:31.405 --> 00:33:32.880 Which content do we use?

NOTE Confidence: 0.823782573636364

00:33:32.880 --> 00:33:34.294 How do we find what we need?

NOTE Confidence: 0.823782573636364

00:33:34.300 --> 00:33:35.340 How do we what?

NOTE Confidence: 0.823782573636364

00:33:35.340 --> 00:33:36.900 What are the strategies that we

NOTE Confidence: 0.823782573636364

00:33:36.963 --> 00:33:38.823 deploy these with our kids and

NOTE Confidence: 0.823782573636364

00:33:38.823 --> 00:33:40.570 know that something's not working,

NOTE Confidence: 0.823782573636364

00:33:40.570 --> 00:33:41.754 that we need to switch to something else?

NOTE Confidence: 0.823782573636364

00:33:41.760 --> 00:33:44.298 How do we start to get a sense of

NOTE Confidence: 0.823782573636364

00:33:44.298 --> 00:33:46.660 what will work for our children?

NOTE Confidence: 0.823782573636364

00:33:46.660 --> 00:33:49.540 And you know the the the world is so

NOTE Confidence: 0.823782573636364

00:33:49.540 --> 00:33:51.334 different from those 1986 studies.

NOTE Confidence: 0.823782573636364

00:33:51.334 --> 00:33:53.798 So in the the studies even even

NOTE Confidence: 0.823782573636364

00:33:53.798 --> 00:33:56.500 as late as in in the year 2000,

NOTE Confidence: 0.823782573636364

00:33:56.500 --> 00:33:57.752 they were really there.

NOTE Confidence: 0.823782573636364

00:33:57.752 --> 00:34:00.454 There was a line in one of the

NOTE Confidence: 0.823782573636364

00:34:00.454 --> 00:34:02.339 probably the most cited video

NOTE Confidence: 0.823782573636364

00:34:02.339 --> 00:34:04.210 modeling paper which which actually

NOTE Confidence: 0.823782573636364

00:34:04.210 --> 00:34:06.430 considered how much does it cost

NOTE Confidence: 0.823782573636364

00:34:06.430 --> 00:34:08.658 in order to film these videos.

NOTE Confidence: 0.823782573636364

00:34:08.660 --> 00:34:10.524 And we don't even think about that now

NOTE Confidence: 0.823782573636364

00:34:10.524 --> 00:34:12.357 because we know that it's pennies and I

NOTE Confidence: 0.823782573636364

00:34:12.357 --> 00:34:14.367 can tell you that with the the number

NOTE Confidence: 0.823782573636364

00:34:14.367 --> 00:34:15.993 of selfies that my teenage daughters.

NOTE Confidence: 0.823782573636364

00:34:16.000 --> 00:34:19.108 It's just like it's.

NOTE Confidence: 0.887733002222222

00:34:19.110 --> 00:34:20.315 It would have been much

NOTE Confidence: 0.887733002222222

00:34:20.315 --> 00:34:21.279 more expensive back then.

NOTE Confidence: 0.887733002222222

00:34:21.280 --> 00:34:23.968 So, so these are things that have changed,

NOTE Confidence: 0.887733002222222

00:34:23.970 --> 00:34:26.898 the landscape has changed.

NOTE Confidence: 0.887733002222222

00:34:26.900 --> 00:34:28.646 We have these changes in the

NOTE Confidence: 0.887733002222222

00:34:28.646 --> 00:34:30.236 convenience and the cost of

NOTE Confidence: 0.887733002222222

00:34:30.236 --> 00:34:31.688 both consumption and creation.

NOTE Confidence: 0.887733002222222

00:34:31.690 --> 00:34:34.090 And so we can generate all these videos,

NOTE Confidence: 0.887733002222222

00:34:34.090 --> 00:34:35.445 right? Like this simple video

NOTE Confidence: 0.887733002222222

00:34:35.445 --> 00:34:36.182 of toothbrushing, right.

NOTE Confidence: 0.887733002222222

00:34:36.182 --> 00:34:37.334 They made such a big difference.

NOTE Confidence: 0.887733002222222

00:34:37.340 --> 00:34:39.167 Of course, it was created by experts.

NOTE Confidence: 0.887733002222222

00:34:39.170 --> 00:34:41.159 And that's The thing is it's we we have

NOTE Confidence: 0.887733002222222

00:34:41.159 --> 00:34:43.508 a really big problem figuring out how to

NOTE Confidence: 0.887733002222222

00:34:43.508 --> 00:34:45.589 get that content into the right place.

NOTE Confidence: 0.887733002222222

00:34:45.590 --> 00:34:47.046 And so that is one thing that

NOTE Confidence: 0.887733002222222

00:34:47.046 --> 00:34:48.389 we really need to address is,

NOTE Confidence: 0.887733002222222

00:34:48.390 --> 00:34:50.514 is figuring out ways of organizing

NOTE Confidence: 0.887733002222222

00:34:50.514 --> 00:34:52.513 information so that we can share

NOTE Confidence: 0.887733002222222

00:34:52.513 --> 00:34:54.593 them and so that we can start to

NOTE Confidence: 0.887733002222222

00:34:54.665 --> 00:34:56.410 help parents identify on their own.

NOTE Confidence: 0.887733002222222

00:34:56.410 --> 00:34:56.910 Because the.

00:34:56.910 --> 00:34:58.434 The problems that that parents are

00:34:58.434 --> 00:35:00.023 having are sometimes they're quick, right?

00:35:00.023 --> 00:35:01.438 Like this, this just happens,

00:35:01.440 --> 00:35:02.388 started happening now.

00:35:02.388 --> 00:35:03.336 Maybe it's it,

00:35:03.340 --> 00:35:04.656 maybe it's gone in a few weeks,

00:35:04.660 --> 00:35:05.484 but if it's not,

00:35:05.484 --> 00:35:07.219 you're going to have a really hard time.

00:35:07.220 --> 00:35:10.209 These are things that we need to

00:35:10.209 --> 00:35:11.840 develop better infrastructure for.

00:35:11.840 --> 00:35:13.716 So thinking about video modeling takes us

00:35:13.716 --> 00:35:15.966 to kind of a next set of technologies.

00:35:15.970 --> 00:35:17.638 And these are kind of more

00:35:17.638 --> 00:35:18.194 recent technologies.

00:35:18.200 --> 00:35:19.480 They are well explored,

00:35:19.480 --> 00:35:21.400 but they're not used that often.

00:35:21.400 --> 00:35:23.248 I don't know how many of you go

00:35:23.248 --> 00:35:25.159 home and put on a virtual reality

00:35:25.159 --> 00:35:27.190 system just to relax or something.

00:35:27.190 --> 00:35:29.310 The truth is that it's super weird, right?

00:35:29.310 --> 00:35:30.510 Like, you're sitting there,

00:35:30.510 --> 00:35:32.346 everyone's like, what are you doing?

00:35:32.350 --> 00:35:36.966 Feel funny, people are coming in behind you.

00:35:36.970 --> 00:35:38.535 But there's a real purpose

00:35:38.535 --> 00:35:39.474 to these technologies,

00:35:39.480 --> 00:35:41.416 and we think about in terms of therapy,

00:35:41.420 --> 00:35:44.552 especially for therapy in individuals who

00:35:44.552 --> 00:35:47.690 may have broader attentional difficulties.

00:35:47.690 --> 00:35:50.300 One is that it really does

00:35:50.300 --> 00:35:51.559 reduce distractions, increasing,

00:35:51.559 --> 00:35:52.337 you know,

00:35:52.337 --> 00:35:54.282 consequently increasing focus and the

00:35:54.282 --> 00:35:57.068 other is that they really can provide

00:35:57.068 --> 00:35:58.624 these really controlled environments

00:35:58.624 --> 00:36:00.909 to deliver really specific content.

00:36:00.910 --> 00:36:04.571 And again the field is maturing A33

00:36:04.571 --> 00:36:07.076 studies now with involving over

00:36:07.080 --> 00:36:11.100 540 individuals with ASD a large.

00:36:11.100 --> 00:36:13.380 Gee,

00:36:13.380 --> 00:36:15.396 from the meta analysis that that's

00:36:15.396 --> 00:36:17.957 shown here is an especially in the

00:36:17.957 --> 00:36:20.249 impact seems to be especially strong

00:36:20.249 --> 00:36:22.312 for things like daily living skills.

00:36:22.312 --> 00:36:24.130 So these these what we might

00:36:24.188 --> 00:36:25.760 consider these more mundane,

00:36:25.760 --> 00:36:27.560 but we know they're anything but

00:36:27.560 --> 00:36:29.160 mundane for individuals with autism.

NOTE Confidence: 0.887733002222222

00:36:29.160 --> 00:36:31.680 That seems to be where these virtual

NOTE Confidence: 0.887733002222222

00:36:31.680 --> 00:36:33.559 reality systems really are shining.

NOTE Confidence: 0.887733002222222

00:36:33.560 --> 00:36:33.892 So.

NOTE Confidence: 0.887733002222222

00:36:33.892 --> 00:36:35.884 Some from virtual reality is an

NOTE Confidence: 0.887733002222222

00:36:35.884 --> 00:36:37.784 even newer type of technology

NOTE Confidence: 0.887733002222222

00:36:37.784 --> 00:36:39.452 called augmented augmented reality

NOTE Confidence: 0.887733002222222

00:36:39.452 --> 00:36:41.840 and this is one that many,

NOTE Confidence: 0.887733002222222

00:36:41.840 --> 00:36:44.576 many people probably haven't experienced yet.

NOTE Confidence: 0.887733002222222

00:36:44.580 --> 00:36:46.335 Augmented reality works a lot

NOTE Confidence: 0.887733002222222

00:36:46.335 --> 00:36:48.090 like virtual reality except that

NOTE Confidence: 0.887733002222222

00:36:48.148 --> 00:36:49.954 you are still in the real world.

NOTE Confidence: 0.887733002222222

00:36:49.960 --> 00:36:52.291 So basically you could put on a

NOTE Confidence: 0.887733002222222

00:36:52.291 --> 00:36:54.067 for instance the Microsoft HoloLens

NOTE Confidence: 0.887733002222222

00:36:54.067 --> 00:36:56.891 is a is a really nice example of

NOTE Confidence: 0.887733002222222

00:36:56.900 --> 00:36:58.220 of augmented reality systems where

NOTE Confidence: 0.887733002222222

00:36:58.220 --> 00:36:59.992 basically you put them on and you

NOTE Confidence: 0.887733002222222

00:36:59.992 --> 00:37:01.406 can actually see the scene in front

NOTE Confidence: 0.887733002222222

00:37:01.406 --> 00:37:02.901 of you can see everything in front

NOTE Confidence: 0.887733002222222

00:37:02.901 --> 00:37:04.984 of you and what the technology does,

NOTE Confidence: 0.887733002222222

00:37:04.984 --> 00:37:05.820 it allows.

NOTE Confidence: 0.887733002222222

00:37:05.820 --> 00:37:07.450 The computers that are embedded

NOTE Confidence: 0.887733002222222

00:37:07.450 --> 00:37:09.080 onto these systems to put

NOTE Confidence: 0.817084797727273

00:37:09.139 --> 00:37:11.369 artificial objects artificial basically to

NOTE Confidence: 0.817084797727273

00:37:11.369 --> 00:37:14.059 manipulate the environment in front of you.

NOTE Confidence: 0.817084797727273

00:37:14.060 --> 00:37:15.943 And that creates an entirely new way

NOTE Confidence: 0.817084797727273

00:37:15.943 --> 00:37:17.913 of thinking about how we can address

NOTE Confidence: 0.817084797727273

00:37:17.913 --> 00:37:19.830 interventions that kind of has, you know,

NOTE Confidence: 0.817084797727273

00:37:19.830 --> 00:37:21.950 one of the one of the concerns about

NOTE Confidence: 0.817084797727273

00:37:22.015 --> 00:37:24.055 something like virtual reality is that

NOTE Confidence: 0.817084797727273

00:37:24.055 --> 00:37:26.520 it's not really life like in some ways,

NOTE Confidence: 0.817084797727273

00:37:26.520 --> 00:37:28.340 right, especially if you're

NOTE Confidence: 0.817084797727273

00:37:28.340 --> 00:37:30.160 talking about computer avatars.

NOTE Confidence: 0.817084797727273

00:37:30.160 --> 00:37:31.896 But you know you're surrounded by system and

NOTE Confidence: 0.817084797727273

00:37:31.896 --> 00:37:33.411 you know that the environment around you

NOTE Confidence: 0.817084797727273

00:37:33.411 --> 00:37:35.618 is not real and you can't also, you also.

NOTE Confidence: 0.817084797727273

00:37:35.618 --> 00:37:36.954 Aren't interacting with other

NOTE Confidence: 0.817084797727273

00:37:36.954 --> 00:37:39.178 people in kind of the live fluid

NOTE Confidence: 0.817084797727273

00:37:39.178 --> 00:37:41.103 way that you would in real life.

NOTE Confidence: 0.817084797727273

00:37:41.110 --> 00:37:42.550 So there's a generalization

NOTE Confidence: 0.817084797727273

00:37:42.550 --> 00:37:44.710 barrier that exists there as well.

NOTE Confidence: 0.817084797727273

00:37:44.710 --> 00:37:46.420 And so augmented reality may

NOTE Confidence: 0.817084797727273

00:37:46.420 --> 00:37:48.130 help us get around that.

NOTE Confidence: 0.817084797727273

00:37:48.130 --> 00:37:50.398 So I'll give you a really quick

NOTE Confidence: 0.817084797727273

00:37:50.398 --> 00:37:52.480 example that we did in our lab,

NOTE Confidence: 0.817084797727273

00:37:52.480 --> 00:37:56.728 just focused on on augmented reality.

NOTE Confidence: 0.817084797727273

00:37:56.730 --> 00:37:57.316 And this,

NOTE Confidence: 0.817084797727273

00:37:57.316 --> 00:37:59.367 this is kind of a simple task

NOTE Confidence: 0.817084797727273

00:37:59.367 --> 00:38:01.112 where an experimenter is trying

NOTE Confidence: 0.817084797727273

00:38:01.112 --> 00:38:03.582 to engage the child and the child

NOTE Confidence: 0.817084797727273

00:38:03.582 --> 00:38:05.538 is wearing this one of these.

NOTE Confidence: 0.817084797727273

00:38:05.540 --> 00:38:08.564 The hollow lenses and some that was a test.

NOTE Confidence: 0.817084797727273

00:38:08.570 --> 00:38:10.670 This is that was the baseline task

NOTE Confidence: 0.817084797727273

00:38:10.670 --> 00:38:12.248 where basically you know there's

NOTE Confidence: 0.817084797727273

00:38:12.248 --> 00:38:14.114 just the the the experimenter trying

NOTE Confidence: 0.817084797727273

00:38:14.114 --> 00:38:16.332 to get the attention trying to to

NOTE Confidence: 0.817084797727273

00:38:16.332 --> 00:38:19.595 interact with the child and this is

NOTE Confidence: 0.817084797727273

00:38:19.595 --> 00:38:22.970 another condition where when the.

NOTE Confidence: 0.817084797727273

00:38:22.970 --> 00:38:25.670 Experiments or space comes into

NOTE Confidence: 0.817084797727273

00:38:25.670 --> 00:38:31.559 view instead of. Oops. Instead of.

NOTE Confidence: 0.817084797727273

00:38:31.560 --> 00:38:32.298 Nothing happening this,

NOTE Confidence: 0.817084797727273

00:38:32.298 --> 00:38:34.360 this is actually what the child is seeing,

NOTE Confidence: 0.817084797727273

00:38:34.360 --> 00:38:34.578 right?

NOTE Confidence: 0.817084797727273

00:38:34.578 --> 00:38:35.014 So look,

NOTE Confidence: 0.817084797727273

00:38:35.014 --> 00:38:36.800 the star appears over the face and the

NOTE Confidence: 0.817084797727273

00:38:36.800 --> 00:38:38.270 idea was to explore whether or not

NOTE Confidence: 0.817084797727273

00:38:38.270 --> 00:38:39.823 there was kind of like this active

NOTE Confidence: 0.817084797727273

00:38:39.823 --> 00:38:41.203 barrier to looking at the face.

NOTE Confidence: 0.817084797727273

00:38:41.203 --> 00:38:43.467 What we saw was just was just no

NOTE Confidence: 0.817084797727273

00:38:43.467 --> 00:38:45.775 indication that the the child was interested.

NOTE Confidence: 0.817084797727273

00:38:45.780 --> 00:38:47.967 And so this is a kind of a final

NOTE Confidence: 0.817084797727273

00:38:47.967 --> 00:38:49.598 condition where we basically put a

NOTE Confidence: 0.817084797727273

00:38:49.598 --> 00:38:51.738 box over the face and this is like,

NOTE Confidence: 0.817084797727273

00:38:51.740 --> 00:38:53.165 it's just a simple idea, right?

NOTE Confidence: 0.817084797727273

00:38:53.165 --> 00:38:54.740 You're just highlighting where the face is.

NOTE Confidence: 0.817084797727273

00:38:54.740 --> 00:38:56.810 And this is a child who was nonverbal

NOTE Confidence: 0.817084797727273

00:38:56.810 --> 00:38:59.160 as about 7 years old.

NOTE Confidence: 0.817084797727273

00:38:59.160 --> 00:39:01.920 And we could see that this.

NOTE Confidence: 0.817084797727273

00:39:01.920 --> 00:39:04.097 Type of very simple type of strategy

NOTE Confidence: 0.817084797727273

00:39:04.097 --> 00:39:06.829 really can help provide some visual cues now.

NOTE Confidence: 0.817084797727273

00:39:06.830 --> 00:39:09.133 Now of course you know the child

NOTE Confidence: 0.817084797727273

00:39:09.133 --> 00:39:13.480 is looking at the box, right?

NOTE Confidence: 0.817084797727273

00:39:13.480 --> 00:39:14.838 May not be looking at the face,

NOTE Confidence: 0.817084797727273

00:39:14.840 --> 00:39:16.196 but we all know there's ways.

NOTE Confidence: 0.817084797727273

00:39:16.200 --> 00:39:17.915 Once you get there, you can start,

NOTE Confidence: 0.817084797727273

00:39:17.920 --> 00:39:18.869 you can work with that, right.

NOTE Confidence: 0.817084797727273

00:39:18.869 --> 00:39:20.472 You can work with the child is

NOTE Confidence: 0.817084797727273

00:39:20.472 --> 00:39:21.440 orienting towards the person.

NOTE Confidence: 0.817084797727273

00:39:21.440 --> 00:39:22.220 And now we can,

NOTE Confidence: 0.817084797727273

00:39:22.220 --> 00:39:24.022 we can go on from there and start

NOTE Confidence: 0.817084797727273

00:39:24.022 --> 00:39:25.370 fading those, those stimuli.

NOTE Confidence: 0.817084797727273

00:39:25.370 --> 00:39:27.295 We can change them around.

NOTE Confidence: 0.817084797727273

00:39:27.300 --> 00:39:29.300 And so it opens up a wealth of

NOTE Confidence: 0.817084797727273

00:39:29.300 --> 00:39:30.925 possibility that perhaps would have

NOTE Confidence: 0.817084797727273

00:39:30.925 --> 00:39:33.055 been very difficult to achieve otherwise.

NOTE Confidence: 0.817084797727273

00:39:33.060 --> 00:39:35.770 Other examples of augmented reality

NOTE Confidence: 0.817084797727273

00:39:35.770 --> 00:39:38.911 include this work by Dennis Wall

NOTE Confidence: 0.817084797727273

00:39:38.911 --> 00:39:41.790 and and Caitlin boss and this is

NOTE Confidence: 0.817084797727273

00:39:41.790 --> 00:39:44.610 a study that uses Google Glass,

NOTE Confidence: 0.817084797727273

00:39:44.610 --> 00:39:45.961 which I don't even think that they

NOTE Confidence: 0.817084797727273

00:39:45.961 --> 00:39:47.180 make these Google glasses anymore.

NOTE Confidence: 0.817084797727273

00:39:47.180 --> 00:39:48.824 So the Google Glass was basically

NOTE Confidence: 0.817084797727273

00:39:48.824 --> 00:39:50.866 these kind of a little headset that

NOTE Confidence: 0.817084797727273

00:39:50.866 --> 00:39:52.938 you would wear and they're in the

NOTE Confidence: 0.84470823375

00:39:52.999 --> 00:39:54.227 corner of the headset.

NOTE Confidence: 0.84470823375

00:39:54.230 --> 00:39:56.575 You can see this little little area

NOTE Confidence: 0.84470823375

00:39:56.575 --> 00:39:58.705 where there's actually a camera that

NOTE Confidence: 0.84470823375

00:39:58.705 --> 00:40:00.470 essentially projects directly onto your

NOTE Confidence: 0.84470823375

00:40:00.470 --> 00:40:03.029 eye and letting you see a little small.

00:40:03.030 --> 00:40:05.046 Heads up, heads up, heads up display

00:40:05.046 --> 00:40:07.376 in kind of the corner of your eye.

00:40:07.380 --> 00:40:10.276 And so what's what Dennis and his team

00:40:10.276 --> 00:40:13.300 did was that he built this system so

00:40:13.300 --> 00:40:16.640 that a child could play with one of his,

00:40:16.640 --> 00:40:18.915 his, his or her parents and they

00:40:18.915 --> 00:40:22.204 would engage in a game of of kind of

00:40:22.204 --> 00:40:23.696 replicating each other's emotions.

00:40:23.700 --> 00:40:26.396 And one of the things that that this

00:40:26.396 --> 00:40:28.925 technology did was that depending on what

00:40:28.925 --> 00:40:31.440 the emotion that the parent was doing,

00:40:31.440 --> 00:40:33.140 it would basically provide explicit.

00:40:33.140 --> 00:40:35.270 Information to the child about

00:40:35.270 --> 00:40:36.974 what that emotion was.

00:40:36.980 --> 00:40:39.913 And the result of this was that

00:40:39.913 --> 00:40:42.079 after going through this this,

NOTE Confidence: 0.84470823375

00:40:42.080 --> 00:40:43.515 you know, series of 20 minute games,

NOTE Confidence: 0.84470823375

00:40:43.520 --> 00:40:44.942 expected to be 4 * A Week,

NOTE Confidence: 0.84470823375

00:40:44.942 --> 00:40:46.028 I think they quite got there,

NOTE Confidence: 0.84470823375

00:40:46.030 --> 00:40:48.614 but that was the plan for six weeks.

NOTE Confidence: 0.84470823375

00:40:48.620 --> 00:40:51.830 He saw positive improvements in

NOTE Confidence: 0.84470823375

00:40:51.830 --> 00:40:55.342 the Vineland socialization scores,

NOTE Confidence: 0.84470823375

00:40:55.342 --> 00:41:00.754 which was I think. Quite nice to see.

NOTE Confidence: 0.84470823375

00:41:00.754 --> 00:41:02.930 So one of the first examples of augmented

NOTE Confidence: 0.84470823375

00:41:02.930 --> 00:41:04.964 reality actually having a formal impact.

NOTE Confidence: 0.84470823375

00:41:04.970 --> 00:41:07.163 Now we think about augmented reality, right,

NOTE Confidence: 0.84470823375

00:41:07.163 --> 00:41:08.928 providing information that children with

NOTE Confidence: 0.84470823375

00:41:08.928 --> 00:41:11.708 autism may not have had readily on their own,

NOTE Confidence: 0.84470823375

00:41:11.710 --> 00:41:11.942 right.

NOTE Confidence: 0.84470823375

00:41:11.942 --> 00:41:13.102 So like this motion information

NOTE Confidence: 0.84470823375

00:41:13.102 --> 00:41:14.270 can be difficult to have,

NOTE Confidence: 0.84470823375

00:41:14.270 --> 00:41:16.130 but we also didn't think about.

NOTE Confidence: 0.84470823375

00:41:16.130 --> 00:41:18.020 There's also a lot of things that

NOTE Confidence: 0.84470823375

00:41:18.020 --> 00:41:19.477 are developing that are things

NOTE Confidence: 0.84470823375

00:41:19.477 --> 00:41:20.967 that we never really expected.

NOTE Confidence: 0.84470823375

00:41:20.970 --> 00:41:22.149 So for instance,

NOTE Confidence: 0.84470823375

00:41:22.149 --> 00:41:23.721 augmented augmenting abilities is

NOTE Confidence: 0.84470823375

00:41:23.721 --> 00:41:25.625 something that that is possible

NOTE Confidence: 0.84470823375

00:41:25.625 --> 00:41:27.605 with the right types of modalities.

NOTE Confidence: 0.84470823375

00:41:27.610 --> 00:41:29.350 This is just an example.

NOTE Confidence: 0.84470823375

00:41:29.350 --> 00:41:30.094 It's kind of a.

NOTE Confidence: 0.84470823375

00:41:30.094 --> 00:41:31.210 Almost a thought experiment because I

NOTE Confidence: 0.84470823375

00:41:31.249 --> 00:41:32.689 haven't heard more about this technology,

NOTE Confidence: 0.84470823375

00:41:32.690 --> 00:41:34.358 but I just love the idea.

NOTE Confidence: 0.84470823375

00:41:34.360 --> 00:41:37.104 So this is this is a wearable

NOTE Confidence: 0.84470823375

00:41:37.104 --> 00:41:39.443 interface that basically is a series

NOTE Confidence: 0.84470823375

00:41:39.443 --> 00:41:41.258 of electrodes that goes around

NOTE Confidence: 0.84470823375

00:41:41.258 --> 00:41:43.797 the the the throat and the face.

NOTE Confidence: 0.84470823375

00:41:43.800 --> 00:41:45.487 And what it does is it allows

NOTE Confidence: 0.84470823375

00:41:45.487 --> 00:41:47.172 you to subvocalize and then it

NOTE Confidence: 0.84470823375

00:41:47.172 --> 00:41:48.380 turns those sub vocalizations,

NOTE Confidence: 0.84470823375

00:41:48.380 --> 00:41:51.180 which no one can hear into speech.

NOTE Confidence: 0.84470823375

00:41:51.180 --> 00:41:52.605 And there's a it's actually

NOTE Confidence: 0.84470823375

00:41:52.605 --> 00:41:54.030 fairly complicated to do this

NOTE Confidence: 0.84470823375

00:41:54.080 --> 00:41:55.430 because as you can imagine,

NOTE Confidence: 0.84470823375

00:41:55.430 --> 00:41:57.118 like all the things that you would expect

NOTE Confidence: 0.84470823375

00:41:57.118 --> 00:41:58.900 to be happening when you're subvocalizing

NOTE Confidence: 0.84470823375

00:41:58.900 --> 00:42:00.868 to yourself are not really happening.

NOTE Confidence: 0.84470823375

00:42:00.870 --> 00:42:01.173 Right.

NOTE Confidence: 0.84470823375

00:42:01.173 --> 00:42:03.294 And so it's basically a machine learning

NOTE Confidence: 0.84470823375

00:42:03.294 --> 00:42:05.495 model that figures out how to map

NOTE Confidence: 0.84470823375

00:42:05.495 --> 00:42:07.035 these really minute muscle movements

NOTE Confidence: 0.84470823375

00:42:07.092 --> 00:42:09.052 that are so slight that you can barely

NOTE Confidence: 0.84470823375

00:42:09.052 --> 00:42:10.782 even see them into actual speech.

NOTE Confidence: 0.84470823375

00:42:10.782 --> 00:42:13.020 And this is really some type of

NOTE Confidence: 0.84470823375

00:42:13.020 --> 00:42:15.006 technology that that we think could

NOTE Confidence: 0.84470823375

00:42:15.006 --> 00:42:17.089 be really valuable for not speaking

NOTE Confidence: 0.84470823375

00:42:17.089 --> 00:42:19.147 individuals with autism as this thing

NOTE Confidence: 0.84470823375

00:42:19.147 --> 00:42:21.106 from nonverbal individuals with autism,

NOTE Confidence: 0.84470823375

00:42:21.106 --> 00:42:23.126 not speaking individuals with autism.

NOTE Confidence: 0.84470823375

00:42:23.130 --> 00:42:25.302 This may provide a route for

NOTE Confidence: 0.84470823375

00:42:25.302 --> 00:42:27.236 speech depending on the nature

NOTE Confidence: 0.84470823375

00:42:27.236 --> 00:42:28.900 of the particular difficulties

NOTE Confidence: 0.84470823375

00:42:28.900 --> 00:42:30.950 that are responsible for them.

NOTE Confidence: 0.84470823375

00:42:30.950 --> 00:42:32.318 Not speaking and so.

NOTE Confidence: 0.84470823375

00:42:32.318 --> 00:42:34.028 These technologies are not just

NOTE Confidence: 0.84470823375

00:42:34.028 --> 00:42:35.848 providing kind of new information

NOTE Confidence: 0.84470823375

00:42:35.848 --> 00:42:37.623 and so that's extremely important.

NOTE Confidence: 0.84470823375

00:42:37.630 --> 00:42:39.886 It's also providing new ways of

NOTE Confidence: 0.84470823375

00:42:39.886 --> 00:42:42.332 conveying for the the individuals with

NOTE Confidence: 0.84470823375

00:42:42.332 --> 00:42:45.370 autism to find a voice for themselves.

NOTE Confidence: 0.858670934736842

00:42:45.370 --> 00:42:48.100 So. These type of technologies in in

NOTE Confidence: 0.858670934736842

00:42:48.100 --> 00:42:50.646 conjunction with each other really point

NOTE Confidence: 0.858670934736842

00:42:50.646 --> 00:42:53.250 towards this idea of social prosthesis.

NOTE Confidence: 0.858670934736842

00:42:53.250 --> 00:42:55.476 This this concept of social prosthesis

NOTE Confidence: 0.858670934736842

00:42:55.476 --> 00:42:58.220 is is is actually fairly old and

NOTE Confidence: 0.858670934736842

00:42:58.220 --> 00:43:01.618 the idea is that that there's a

NOTE Confidence: 0.858670934736842

00:43:01.618 --> 00:43:03.322 collection of technologies that

NOTE Confidence: 0.858670934736842

00:43:03.322 --> 00:43:05.230 enable interaction in a social,

NOTE Confidence: 0.858670934736842

00:43:05.230 --> 00:43:07.834 in a in a social fashion with

NOTE Confidence: 0.858670934736842

00:43:07.834 --> 00:43:09.478 others that basically.

NOTE Confidence: 0.858670934736842

00:43:09.478 --> 00:43:13.282 Revolves around providing access to skills

NOTE Confidence: 0.858670934736842

00:43:13.282 --> 00:43:16.605 that otherwise that individual would not

NOTE Confidence: 0.858670934736842

00:43:16.605 --> 00:43:19.108 have and this is something that is is

NOTE Confidence: 0.858670934736842

00:43:19.108 --> 00:43:20.900 relatively new in terms of development.

NOTE Confidence: 0.858670934736842

00:43:20.900 --> 00:43:23.456 We haven't seen a lot of these type of

NOTE Confidence: 0.858670934736842

00:43:23.456 --> 00:43:25.008 technologies but they include things

NOTE Confidence: 0.858670934736842

00:43:25.008 --> 00:43:27.210 that help read the emotions of other.

NOTE Confidence: 0.858670934736842

00:43:27.210 --> 00:43:28.946 We can imagine that as time goes

NOTE Confidence: 0.858670934736842

00:43:28.946 --> 00:43:30.787 on we could have have systems that

NOTE Confidence: 0.858670934736842

00:43:30.787 --> 00:43:32.969 tell us if if some some like what,

NOTE Confidence: 0.858670934736842

00:43:32.970 --> 00:43:35.602 what is the nature of this particular

NOTE Confidence: 0.858670934736842

00:43:35.602 --> 00:43:37.526 interaction and then even beyond

NOTE Confidence: 0.858670934736842

00:43:37.526 --> 00:43:39.704 that how should I respond to

NOTE Confidence: 0.858670934736842

00:43:39.704 --> 00:43:41.150 this particular situation?

NOTE Confidence: 0.858670934736842

00:43:41.150 --> 00:43:42.410 It gets a little bit complicated,

NOTE Confidence: 0.858670934736842

00:43:42.410 --> 00:43:45.470 so I'll save that for a little bit later.

NOTE Confidence: 0.858670934736842

00:43:45.470 --> 00:43:46.186 Beyond that,

NOTE Confidence: 0.858670934736842

00:43:46.186 --> 00:43:47.976 beyond all of these technologies,

NOTE Confidence: 0.858670934736842

00:43:47.980 --> 00:43:49.387 of course, are the ideas that we

NOTE Confidence: 0.858670934736842

00:43:49.387 --> 00:43:50.839 could also take these technologies.

NOTE Confidence: 0.858670934736842

00:43:50.840 --> 00:43:51.563 And, you know,

NOTE Confidence: 0.858670934736842

00:43:51.563 --> 00:43:52.286 to this point,

NOTE Confidence: 0.858670934736842

00:43:52.290 --> 00:43:54.984 we've been thinking about them as

NOTE Confidence: 0.858670934736842

00:43:54.984 --> 00:43:57.228 technologies that exist between a

NOTE Confidence: 0.858670934736842

00:43:57.228 --> 00:43:59.478 person with autism and someone else.

NOTE Confidence: 0.858670934736842

00:43:59.480 --> 00:44:01.944 We can also think about systems that might

NOTE Confidence: 0.858670934736842

00:44:01.944 --> 00:44:04.480 be able to provide education directly.

NOTE Confidence: 0.858670934736842

00:44:04.480 --> 00:44:05.614 And so when we think about that,

NOTE Confidence: 0.858670934736842

00:44:05.620 --> 00:44:07.818 we think about systems like these robots,

NOTE Confidence: 0.858670934736842

00:44:07.820 --> 00:44:08.088 right.

NOTE Confidence: 0.858670934736842

00:44:08.088 --> 00:44:09.696 And before the all the systems

NOTE Confidence: 0.858670934736842

00:44:09.696 --> 00:44:11.445 that I showed you were these

NOTE Confidence: 0.858670934736842

00:44:11.445 --> 00:44:12.920 robots that work in conjunction

NOTE Confidence: 0.858670934736842

00:44:12.920 --> 00:44:14.670 with some type of intervention.

NOTE Confidence: 0.858670934736842

00:44:14.670 --> 00:44:16.134 These robots could provide

NOTE Confidence: 0.858670934736842

00:44:16.134 --> 00:44:17.964 skill training on their own,

NOTE Confidence: 0.858670934736842

00:44:17.970 --> 00:44:20.770 but it it is just a massively much

NOTE Confidence: 0.858670934736842

00:44:20.770 --> 00:44:22.915 more complex proposition to have a

NOTE Confidence: 0.858670934736842

00:44:22.915 --> 00:44:25.720 robot sit in a house for instance.

NOTE Confidence: 0.858670934736842

00:44:25.720 --> 00:44:28.208 This complex environment and

NOTE Confidence: 0.858670934736842

00:44:28.208 --> 00:44:30.886 provides different types of skill

NOTE Confidence: 0.858670934736842

00:44:30.886 --> 00:44:33.456 remediation or targeted skill therapy

NOTE Confidence: 0.858670934736842

00:44:33.456 --> 00:44:36.326 without any type of intervention or

NOTE Confidence: 0.858670934736842

00:44:36.326 --> 00:44:38.601 control by some external examiner.

NOTE Confidence: 0.858670934736842

00:44:38.610 --> 00:44:40.778 It has to be fully baked in the

NOTE Confidence: 0.858670934736842

00:44:40.778 --> 00:44:42.007 situations and understanding of

NOTE Confidence: 0.858670934736842

00:44:42.007 --> 00:44:44.191 of context and this was a study

NOTE Confidence: 0.858670934736842

00:44:44.191 --> 00:44:45.750 that was led up by Brian.

NOTE Confidence: 0.858670934736842

00:44:45.750 --> 00:44:48.066 This lady and his NSF expedition

NOTE Confidence: 0.858670934736842

00:44:48.066 --> 00:44:50.290 project together with also Pam Ventola

NOTE Confidence: 0.858670934736842

00:44:50.290 --> 00:44:52.746 and and Laura and a number of other

NOTE Confidence: 0.858670934736842

00:44:52.816 --> 00:44:55.006 colleagues at between the Computer

NOTE Confidence: 0.858670934736842

00:44:55.006 --> 00:44:57.196 science department and the Child

NOTE Confidence: 0.858670934736842

00:44:57.200 --> 00:44:59.882 Study Center and this this project

NOTE Confidence: 0.858670934736842

00:44:59.882 --> 00:45:02.754 showed that the use of this kind

NOTE Confidence: 0.858670934736842

00:45:02.754 --> 00:45:04.868 of cute robot that would basically

NOTE Confidence: 0.858670934736842

00:45:04.868 --> 00:45:07.792 was set up to play games with a

NOTE Confidence: 0.858670934736842

00:45:07.792 --> 00:45:09.814 child with autism over 30 days,

NOTE Confidence: 0.858670934736842

00:45:09.820 --> 00:45:11.560 completely at autonomously,

NOTE Confidence: 0.858670934736842

00:45:11.560 --> 00:45:13.880 completely on its own.

NOTE Confidence: 0.858670934736842

00:45:13.880 --> 00:45:15.720 This this system was effective

NOTE Confidence: 0.858670934736842

00:45:15.720 --> 00:45:18.909 in in kind of at least a short

NOTE Confidence: 0.858670934736842

00:45:18.909 --> 00:45:21.014 term gain in joint attention,

NOTE Confidence: 0.858670934736842

00:45:21.020 --> 00:45:23.533 joint attention skills in a group of

80

NOTE Confidence: 0.858670934736842

00:45:23.533 --> 00:45:26.118 I think about 1212 children with ASD.

NOTE Confidence: 0.858670934736842

00:45:26.118 --> 00:45:28.380 So we've been talking a lot.

NOTE Confidence: 0.858670934736842

00:45:28.380 --> 00:45:30.012 How long has this spread around by the

NOTE Confidence: 0.858670934736842

00:45:30.012 --> 00:45:32.162 way it's supposed to be an I think I'm.

NOTE Confidence: 0.858670934736842

00:45:32.162 --> 00:45:33.970 It goes to two.

NOTE Confidence: 0.858670934736842

00:45:33.970 --> 00:45:34.670 What time is it now?

NOTE Confidence: 0.863158834

00:45:37.310 --> 00:45:39.418 I got 10 minutes, OK. All right.

NOTE Confidence: 0.863158834

00:45:39.418 --> 00:45:41.062 So, so we we are thinking

NOTE Confidence: 0.863158834

00:45:41.062 --> 00:45:42.420 about these technologies.

NOTE Confidence: 0.863158834

00:45:42.420 --> 00:45:44.170 We've been talking a lot about interventions,

NOTE Confidence: 0.863158834

00:45:44.170 --> 00:45:45.871 but we also should be thinking about

NOTE Confidence: 0.863158834

00:45:45.871 --> 00:45:47.280 technologies like how do these

NOTE Confidence: 0.863158834

00:45:47.280 --> 00:45:48.552 technologies increase our understandings

NOTE Confidence: 0.863158834

00:45:48.552 --> 00:45:50.397 of individual because they that becomes

NOTE Confidence: 0.863158834

00:45:50.397 --> 00:45:51.969 a critical part of the interventions.

NOTE Confidence: 0.863158834

00:45:51.970 --> 00:45:53.354 Thinking about the measurement,

NOTE Confidence: 0.863158834

00:45:53.354 --> 00:45:55.084 the measurement feeds into what

NOTE Confidence: 0.863158834

00:45:55.084 --> 00:45:56.854 type of interventions you will

NOTE Confidence: 0.863158834

00:45:56.854 --> 00:45:58.226 run during the intervention.

NOTE Confidence: 0.863158834

00:45:58.230 --> 00:46:00.358 It tells us about how we might adjust

NOTE Confidence: 0.863158834

00:46:00.358 --> 00:46:01.828 the therapies that we're going,

NOTE Confidence: 0.863158834

00:46:01.830 --> 00:46:03.362 we're, we're, we're administering.

NOTE Confidence: 0.863158834

00:46:03.362 --> 00:46:06.098 And so all of these technologies like

NOTE Confidence: 0.863158834

00:46:06.098 --> 00:46:07.958 the platform is actually agnostic.

NOTE Confidence: 0.863158834

00:46:07.960 --> 00:46:10.258 In many ways to the application, right?

NOTE Confidence: 0.863158834

00:46:10.258 --> 00:46:12.962 So we can think of robots that are

NOTE Confidence: 0.863158834

00:46:12.962 --> 00:46:14.776 designed in order to for instance,

NOTE Confidence: 0.863158834

00:46:14.776 --> 00:46:17.818 in this case, a study done by Laura Walk,

NOTE Confidence: 0.863158834

00:46:17.820 --> 00:46:20.970 if you so in in our lab.

NOTE Confidence: 0.863158834

00:46:20.970 --> 00:46:23.305 Play activities with just this

NOTE Confidence: 0.863158834

00:46:23.305 --> 00:46:24.706 small ball robot.

NOTE Confidence: 0.863158834

00:46:24.710 --> 00:46:26.585 We're associated with

NOTE Confidence: 0.863158834

00:46:26.585 --> 00:46:28.460 developmental skills and.

NOTE Confidence: 0.863158834

00:46:28.460 --> 00:46:30.314 We can say the same thing with video games,

NOTE Confidence: 0.863158834

00:46:30.320 --> 00:46:30.768 right?

NOTE Confidence: 0.863158834

00:46:30.768 --> 00:46:33.904 So this really kind of acute system

NOTE Confidence: 0.863158834

00:46:33.904 --> 00:46:37.349 that was developed by Evan Lee was meant

NOTE Confidence: 0.863158834

00:46:37.349 --> 00:46:39.591 to look at executive function deficits,

NOTE Confidence: 0.863158834

00:46:39.591 --> 00:46:41.613 kind of like the NIH toolbox,

NOTE Confidence: 0.863158834

00:46:41.620 --> 00:46:44.875 but to consider the specific aspects of

NOTE Confidence: 0.863158834

00:46:44.875 --> 00:46:48.700 autism, social, specifically social,

NOTE Confidence: 0.863158834

00:46:48.700 --> 00:46:50.545 possibly asymmetric performance

NOTE Confidence: 0.863158834

00:46:50.545 --> 00:46:54.235 in social and non social domains.

NOTE Confidence: 0.863158834

00:46:54.240 --> 00:46:56.100 And.

NOTE Confidence: 0.863158834

00:46:56.100 --> 00:46:58.086 You know, virtual reality can also

NOTE Confidence: 0.863158834

00:46:58.086 --> 00:47:00.719 be used in order to to look at this.

NOTE Confidence: 0.863158834

00:47:00.720 --> 00:47:02.283 This doesn't play.

NOTE Confidence: 0.863158834

00:47:02.283 --> 00:47:03.846 That was a.

NOTE Confidence: 0.863158834

00:47:03.850 --> 00:47:06.506 It's the only video I forgot to convert.

NOTE Confidence: 0.863158834

00:47:06.510 --> 00:47:07.986 Virtual reality can also be used.

NOTE Confidence: 0.863158834

00:47:07.990 --> 00:47:10.111 We get in order to get information

NOTE Confidence: 0.863158834

00:47:10.111 --> 00:47:11.450 about individuals with autism.

NOTE Confidence: 0.863158834

00:47:11.450 --> 00:47:11.954 So for instance,

NOTE Confidence: 0.863158834

00:47:11.954 --> 00:47:13.449 we can look to see how they aren't

NOTE Confidence: 0.863158834

00:47:13.449 --> 00:47:14.573 their bodies towards different

NOTE Confidence: 0.863158834

00:47:14.573 --> 00:47:15.416 types of information.

NOTE Confidence: 0.863158834

00:47:15.420 --> 00:47:17.534 That provides a lot of information similar

NOTE Confidence: 0.863158834

00:47:17.534 --> 00:47:20.047 to a lot of eye tracking work that,

NOTE Confidence: 0.863158834

00:47:20.050 --> 00:47:21.280 that, that, that.

NOTE Confidence: 0.863158834

00:47:21.280 --> 00:47:23.740 We've used in order to understand

NOTE Confidence: 0.863158834

00:47:23.740 --> 00:47:26.560 early and early development in later

NOTE Confidence: 0.863158834

00:47:26.560 --> 00:47:29.480 social skills and individuals with autism.

NOTE Confidence: 0.863158834

00:47:29.480 --> 00:47:30.275 And you know,

NOTE Confidence: 0.863158834

00:47:30.275 --> 00:47:32.540 of course like we can even think about,

NOTE Confidence: 0.863158834

00:47:32.540 --> 00:47:32.984 you know,

NOTE Confidence: 0.863158834

00:47:32.984 --> 00:47:34.316 now that cameras have gotten so

NOTE Confidence: 0.863158834

00:47:34.316 --> 00:47:35.480 advanced in computer vision,

NOTE Confidence: 0.863158834

00:47:35.480 --> 00:47:37.020 algorithms have gotten so advanced,

NOTE Confidence: 0.863158834

00:47:37.020 --> 00:47:38.658 we can even think about using

NOTE Confidence: 0.863158834

00:47:38.658 --> 00:47:39.477 just simple video,

NOTE Confidence: 0.863158834

00:47:39.480 --> 00:47:41.280 using those videos to characterize

NOTE Confidence: 0.863158834

00:47:41.280 --> 00:47:42.720 movements of the eyes,

NOTE Confidence: 0.863158834

00:47:42.720 --> 00:47:44.722 of the face of the bodies in

NOTE Confidence: 0.863158834

00:47:44.722 --> 00:47:45.983 order to characterize individuals

NOTE Confidence: 0.863158834

00:47:45.983 --> 00:47:48.041 with autism as they respond to

NOTE Confidence: 0.863158834

00:47:48.041 --> 00:47:49.820 specific types of information.

NOTE Confidence: 0.863158834

00:47:49.820 --> 00:47:50.800 So this is just that.

NOTE Confidence: 0.863158834

00:47:50.800 --> 00:47:52.416 This is more of a computer science study,

00:47:52.420 --> 00:47:54.934 a study that was developed by

00:47:54.934 --> 00:47:57.923 Evan Lee primarily as a kind of

00:47:57.923 --> 00:47:59.973 a strategy for developing new.

00:47:59.980 --> 00:48:01.424 Computational neural networks in

00:48:01.424 --> 00:48:03.590 order to to perform face affect

00:48:03.655 --> 00:48:05.099 recognition and using these

00:48:05.099 --> 00:48:06.904 technologies and applying it to

00:48:06.904 --> 00:48:08.704 like simple recognition tasks

00:48:08.704 --> 00:48:10.994 between individuals with autism and

00:48:10.994 --> 00:48:12.230 typically developing individuals

00:48:12.230 --> 00:48:14.470 as they watched kind of a split

00:48:14.470 --> 00:48:16.543 screen movie of of kind of social

00:48:16.543 --> 00:48:18.350 information on one side and non

00:48:18.350 --> 00:48:20.210 social information on another side.

00:48:20.210 --> 00:48:22.214 Was able to distinguish this with

NOTE Confidence: 0.863158834

00:48:22.214 --> 00:48:24.756 the with the 50% being the baseline

NOTE Confidence: 0.863158834

00:48:24.756 --> 00:48:27.168 children from with ASD versus TIP.

NOTE Confidence: 0.863158834

00:48:27.170 --> 00:48:29.554 Typically developing children with

NOTE Confidence: 0.863158834

00:48:29.554 --> 00:48:34.701 fairly good like around 7076% sensitivity,

NOTE Confidence: 0.863158834

00:48:34.701 --> 00:48:35.603 70% specificity.

NOTE Confidence: 0.863158834

00:48:35.603 --> 00:48:38.309 Similarly using the same type of

NOTE Confidence: 0.863158834

00:48:38.309 --> 00:48:40.276 technology to focus on the eyes

NOTE Confidence: 0.863158834

00:48:40.276 --> 00:48:41.726 and capture where the eyes

NOTE Confidence: 0.824793341

00:48:41.794 --> 00:48:44.517 are looking and to turn that into

NOTE Confidence: 0.824793341

00:48:44.517 --> 00:48:46.091 information about attentional strategies

NOTE Confidence: 0.824793341

00:48:46.091 --> 00:48:48.898 that individuals are using was able to

NOTE Confidence: 0.824793341

00:48:48.898 --> 00:48:51.447 increase the performance of these these

NOTE Confidence: 0.824793341

00:48:51.450 --> 00:48:54.405 of these systems to about 80% eighty

NOTE Confidence: 0.824793341

00:48:54.405 --> 00:48:57.855 3% sensitivity and and almost 90%.

NOTE Confidence: 0.824793341

00:48:57.860 --> 00:48:59.228 Sensitivity, now what can we do

NOTE Confidence: 0.824793341

00:48:59.228 --> 00:49:00.780 with these type of technologies?

NOTE Confidence: 0.824793341

00:49:00.780 --> 00:49:01.860 So, so one of the things,

NOTE Confidence: 0.824793341

00:49:01.860 --> 00:49:04.618 one of the things that really is

NOTE Confidence: 0.824793341

00:49:04.618 --> 00:49:07.018 enabled by these especially these these

NOTE Confidence: 0.824793341

00:49:07.018 --> 00:49:09.048 computer vision types of technologies

NOTE Confidence: 0.824793341

00:49:09.048 --> 00:49:11.183 applied through tablets is that we

NOTE Confidence: 0.824793341

00:49:11.183 --> 00:49:12.443 really increase our accessibility

NOTE Confidence: 0.824793341

00:49:12.443 --> 00:49:14.605 or our ability to provide this type

NOTE Confidence: 0.824793341

00:49:14.605 --> 00:49:16.345 of technology out into the world.

NOTE Confidence: 0.824793341

00:49:16.345 --> 00:49:18.465 So this is a study that we did

NOTE Confidence: 0.824793341

00:49:18.465 --> 00:49:20.236 together with the Terry Fox Eater.

NOTE Confidence: 0.824793341

00:49:20.240 --> 00:49:22.459 This is a simple study called kits,

NOTE Confidence: 0.824793341

00:49:22.460 --> 00:49:25.045 which was the Karolinska iPad

NOTE Confidence: 0.824793341

00:49:25.045 --> 00:49:26.487 eye tracking study.

NOTE Confidence: 0.824793341

00:49:26.487 --> 00:49:30.150 And this was a twin study and looked at

NOTE Confidence: 0.824793341

00:49:30.150 --> 00:49:35.456 56 families involving 100 and four children.

00:49:35.460 --> 00:49:38.036 Ranging from 3 to 617 months of age,

00:49:38.040 --> 00:49:42.030 and the idea was to examine the

00:49:42.030 --> 00:49:44.467 potential heritability of gaze

00:49:44.467 --> 00:49:46.947 following in infant twins.

00:49:46.950 --> 00:49:51.017 So this is a monozygotic versus dizygotic.

00:49:51.020 --> 00:49:53.055 Examination and what we found

00:49:53.055 --> 00:49:54.276 from this right,

00:49:54.280 --> 00:49:57.640 this is deployed throughout Sweden right?

00:49:57.640 --> 00:50:00.238 Without us basically ever laying hands,

00:50:00.240 --> 00:50:02.508 laying eyes or hands on any

00:50:02.508 --> 00:50:04.020 of the the families.

00:50:04.020 --> 00:50:05.532 This study showed us some of the

00:50:05.532 --> 00:50:07.208 things that we expected, right.

00:50:07.208 --> 00:50:10.048 So reaction times increased or

00:50:10.048 --> 00:50:12.960 decreased as children got older.

00:50:12.960 --> 00:50:16.806 Full head turns were more more

NOTE Confidence: 0.824793341

00:50:16.810 --> 00:50:18.758 strongly associated with appropriate

NOTE Confidence: 0.824793341

00:50:18.758 --> 00:50:21.680 corrective gaze movements to the target.

NOTE Confidence: 0.824793341

00:50:21.680 --> 00:50:25.406 As compared to just the movement of the eyes.

NOTE Confidence: 0.824793341

00:50:25.410 --> 00:50:26.070 But critically,

NOTE Confidence: 0.824793341

00:50:26.070 --> 00:50:28.710 one of the things that we found was

NOTE Confidence: 0.824793341

00:50:28.777 --> 00:50:31.495 that the reaction time of monozygotic

NOTE Confidence: 0.824793341

00:50:31.495 --> 00:50:33.307 twins was significantly stronger

NOTE Confidence: 0.824793341

00:50:33.310 --> 00:50:36.030 than that of dizygotic twins,

NOTE Confidence: 0.824793341

00:50:36.030 --> 00:50:37.930 suggesting.

NOTE Confidence: 0.824793341

00:50:37.930 --> 00:50:39.626 And this is this is the reaction time.

NOTE Confidence: 0.824793341

00:50:39.630 --> 00:50:40.569 So the gays,

NOTE Confidence: 0.824793341

00:50:40.569 --> 00:50:43.120 the gays of the actress moves to one

NOTE Confidence: 0.824793341

00:50:43.120 --> 00:50:45.605 side or the other and the the child

NOTE Confidence: 0.824793341

00:50:45.605 --> 00:50:48.456 based off of this cute decides to move

NOTE Confidence: 0.824793341

00:50:48.456 --> 00:50:51.328 to to make an eye movement in response.

NOTE Confidence: 0.824793341

00:50:51.330 --> 00:50:54.165 And in monozygotic twins this is this

NOTE Confidence: 0.824793341

00:50:54.165 --> 00:50:56.520 is highly correlated and not in dichotic

NOTE Confidence: 0.824793341

00:50:56.520 --> 00:50:59.048 and not as much in dizygotic twins.

NOTE Confidence: 0.824793341

00:50:59.050 --> 00:51:01.336 And it suggests that to some

NOTE Confidence: 0.824793341

00:51:01.336 --> 00:51:03.564 extent the decision the timing of

NOTE Confidence: 0.824793341

00:51:03.564 --> 00:51:06.084 when you decide to look to a gaze

NOTE Confidence: 0.824793341

00:51:06.158 --> 00:51:08.210 queue in response to a gaze.

NOTE Confidence: 0.824793341

00:51:08.210 --> 00:51:09.865 It's baked in genetically which

NOTE Confidence: 0.824793341

00:51:09.865 --> 00:51:11.879 is I think something that was

NOTE Confidence: 0.824793341

00:51:11.879 --> 00:51:13.730 really really interesting of course

NOTE Confidence: 0.824793341

00:51:13.730 --> 00:51:16.070 relatively small study for a twin

NOTE Confidence: 0.824793341

00:51:16.141 --> 00:51:18.409 study but still I think provocative.

NOTE Confidence: 0.824793341

00:51:18.410 --> 00:51:20.378 So when we start thinking about all of

NOTE Confidence: 0.824793341

00:51:20.378 --> 00:51:21.713 these different types of measurement

NOTE Confidence: 0.824793341

00:51:21.713 --> 00:51:23.297 systems naturally to think of kind

NOTE Confidence: 0.824793341

00:51:23.297 --> 00:51:25.512 of like the end all be all of these

NOTE Confidence: 0.824793341

00:51:25.512 --> 00:51:27.202 measurement systems which is really

NOTE Confidence: 0.824793341

00:51:27.202 --> 00:51:29.222 systems measurement systems that have

NOTE Confidence: 0.824793341

00:51:29.222 --> 00:51:31.363 some type of practical application

NOTE Confidence: 0.824793341

00:51:31.363 --> 00:51:33.490 that may improve ultimately be aimed

NOTE Confidence: 0.824793341

00:51:33.490 --> 00:51:35.851 at improving the lives of of of

NOTE Confidence: 0.824793341

00:51:35.851 --> 00:51:38.107 individual children's and and their family.

NOTE Confidence: 0.824793341

00:51:38.110 --> 00:51:39.814 And so a lot of the work that

NOTE Confidence: 0.824793341

00:51:39.814 --> 00:51:41.743 we've done recently in terms of

NOTE Confidence: 0.824793341

00:51:41.743 --> 00:51:43.191 biomarker development comes from

NOTE Confidence: 0.824793341

00:51:43.191 --> 00:51:44.930 Jamie Partland Autism Biomarkers

NOTE Confidence: 0.824793341

00:51:44.930 --> 00:51:46.367 Consortium clinical trials.

NOTE Confidence: 0.824793341

00:51:46.370 --> 00:51:49.387 And here we are really thinking about

NOTE Confidence: 0.824793341

00:51:49.387 --> 00:51:52.596 how do we take these these what

NOTE Confidence: 0.824793341

00:51:52.596 --> 00:51:54.408 has previously been experimental

NOTE Confidence: 0.824793341

00:51:54.408 --> 00:51:56.220 results and turned them

00:51:56.291 --> 00:51:58.889 into systems that can provide some

00:51:58.889 --> 00:52:01.149 type of meaningful extraction of

00:52:01.149 --> 00:52:02.989 individual of individual information

00:52:02.989 --> 00:52:06.259 that can fulfill any variety of one of

00:52:06.259 --> 00:52:08.197 many different types of varieties of.

00:52:08.200 --> 00:52:10.800 Uses in clinical trials.

00:52:10.800 --> 00:52:14.664 One of these possibilities is comes from

00:52:14.664 --> 00:52:18.341 a comes actually from our our doc themes,

00:52:18.341 --> 00:52:20.196 which is that of stratification.

00:52:20.200 --> 00:52:23.044 This idea that measurement itself can

00:52:23.044 --> 00:52:28.160 provide a lens by which we can really.

00:52:28.160 --> 00:52:31.090 Tear apart these heterogeneous groups.

00:52:31.090 --> 00:52:32.726 We know they're heterogeneous,

00:52:32.726 --> 00:52:35.180 but by using these measurement systems

00:52:35.248 --> 00:52:37.256 we can we can create more homogeneous

00:52:37.256 --> 00:52:40.140 subgroups without out of the the that

NOTE Confidence: 0.837250028

00:52:40.208 --> 00:52:42.638 kind of original heterogeneous pool.

NOTE Confidence: 0.837250028

00:52:42.640 --> 00:52:46.360 And so, so these are really kind of,

NOTE Confidence: 0.837250028

00:52:46.360 --> 00:52:48.154 I think in many ways powerful

NOTE Confidence: 0.837250028

00:52:48.154 --> 00:52:50.633 ideas about how we can use these

NOTE Confidence: 0.837250028

00:52:50.633 --> 00:52:51.397 technologies practically.

NOTE Confidence: 0.837250028

00:52:51.397 --> 00:52:54.610 But I have to say and I I really.

NOTE Confidence: 0.837250028

00:52:54.610 --> 00:52:57.130 Went over time.

NOTE Confidence: 0.837250028

00:52:57.130 --> 00:52:58.876 There's a broader context here, right.

NOTE Confidence: 0.837250028

00:52:58.876 --> 00:53:02.044 And so, so I went from the beginning,

NOTE Confidence: 0.837250028

00:53:02.050 --> 00:53:04.530 these robots all the way to these biomarkers,

NOTE Confidence: 0.837250028

00:53:04.530 --> 00:53:04.813 right.

NOTE Confidence: 0.837250028

00:53:04.813 --> 00:53:06.228 And all along the way,

NOTE Confidence: 0.837250028

00:53:06.230 --> 00:53:08.390 we've been ignoring a kind of

NOTE Confidence: 0.837250028

00:53:08.390 --> 00:53:09.830 a really critical issue,

NOTE Confidence: 0.837250028

00:53:09.830 --> 00:53:12.469 which is that these systems are not

NOTE Confidence: 0.837250028

00:53:12.469 --> 00:53:14.247 being deployed universally and they

NOTE Confidence: 0.837250028

00:53:14.247 --> 00:53:16.291 mirror what we know is happening out

NOTE Confidence: 0.837250028

00:53:16.291 --> 00:53:18.517 in healthcare inequities across all

NOTE Confidence: 0.837250028

00:53:18.517 --> 00:53:20.389 branches of different healthcare

NOTE Confidence: 0.837250028

00:53:20.389 --> 00:53:23.454 across both socioeconomic strata as

NOTE Confidence: 0.837250028

00:53:23.454 --> 00:53:27.702 well as racial ethnic divides and.

NOTE Confidence: 0.837250028

00:53:27.710 --> 00:53:30.128 The question that we really address,

NOTE Confidence: 0.837250028

00:53:30.130 --> 00:53:31.635 we have to think about when we're

NOTE Confidence: 0.837250028

00:53:31.635 --> 00:53:32.565 thinking about especially these

NOTE Confidence: 0.837250028

00:53:32.565 --> 00:53:33.770 measurement systems and we're thinking

NOTE Confidence: 0.837250028

00:53:33.770 --> 00:53:35.360 about how we're going to deploy them

NOTE Confidence: 0.837250028

00:53:35.360 --> 00:53:36.530 and who they're going to benefit.

NOTE Confidence: 0.837250028

00:53:36.530 --> 00:53:37.748 I mean really comes down to this,

NOTE Confidence: 0.837250028

00:53:37.750 --> 00:53:38.922 this key question, right,

NOTE Confidence: 0.837250028

00:53:38.922 --> 00:53:41.267 which has been being asked and I I

NOTE Confidence: 0.837250028

00:53:41.267 --> 00:53:43.136 think just needs to be continuously asked,

NOTE Confidence: 0.837250028

00:53:43.140 --> 00:53:44.470 right, when will clinical trials

NOTE Confidence: 0.837250028

00:53:44.470 --> 00:53:45.268 finally reflect diversity?

NOTE Confidence: 0.837250028

00:53:45.270 --> 00:53:47.610 And that is a struggle for

NOTE Confidence: 0.837250028

00:53:47.610 --> 00:53:50.480 us in all of our studies.

NOTE Confidence: 0.837250028

00:53:50.480 --> 00:53:52.676 We know that that they exist.

NOTE Confidence: 0.837250028

00:53:52.680 --> 00:53:54.880 And yet, like this paper,

NOTE Confidence: 0.837250028

00:53:54.880 --> 00:53:57.076 racial and ethnic disparities in healthcare,

NOTE Confidence: 0.837250028

00:53:57.080 --> 00:53:58.904 in health and healthcare,

NOTE Confidence: 0.837250028

00:53:58.904 --> 00:53:59.816 I mean.

NOTE Confidence: 0.837250028

00:53:59.820 --> 00:54:00.710 To read this article you

NOTE Confidence: 0.837250028

00:54:00.710 --> 00:54:01.880 got to make a payment right.

NOTE Confidence: 0.837250028

00:54:01.880 --> 00:54:03.200 And so that's that's exactly

NOTE Confidence: 0.837250028

00:54:03.200 --> 00:54:04.256 where we are right.

NOTE Confidence: 0.837250028

00:54:04.260 --> 00:54:06.260 So we we know that there's an issue

NOTE Confidence: 0.837250028

00:54:06.260 --> 00:54:08.395 and and here you go here's just the

NOTE Confidence: 0.837250028

00:54:08.395 --> 00:54:11.100 the full live example of the issue.

NOTE Confidence: 0.837250028

00:54:11.100 --> 00:54:13.740 So this has been something that's

NOTE Confidence: 0.837250028

00:54:13.740 --> 00:54:15.892 been discussed not just from the

NOTE Confidence: 0.837250028

00:54:15.892 --> 00:54:17.482 very practical healthcare side of

NOTE Confidence: 0.837250028

00:54:17.482 --> 00:54:19.433 things but also from the side of

NOTE Confidence: 0.837250028

00:54:19.433 --> 00:54:21.200 the science that we're doing right.

NOTE Confidence: 0.837250028

00:54:21.200 --> 00:54:22.520 The the lack of diversity is,

NOTE Confidence: 0.837250028

00:54:22.520 --> 00:54:22.767 is,

NOTE Confidence: 0.837250028

00:54:22.767 --> 00:54:23.014 is,

NOTE Confidence: 0.837250028

00:54:23.014 --> 00:54:24.743 is you know I highlighted here this

NOTE Confidence: 0.837250028

00:54:24.743 --> 00:54:26.526 paper wrote we argue that these

NOTE Confidence: 0.837250028

00:54:26.526 --> 00:54:28.011 demographics cannot be ignored if

NOTE Confidence: 0.837250028

00:54:28.066 --> 00:54:29.728 we want to understand the neural.

NOTE Confidence: 0.837250028

00:54:29.730 --> 00:54:31.390 Countries of human cognition for

NOTE Confidence: 0.837250028

00:54:31.390 --> 00:54:32.718 the diverse general population.

NOTE Confidence: 0.837250028

00:54:32.720 --> 00:54:33.756 But I don't think you even need

NOTE Confidence: 0.837250028

00:54:33.756 --> 00:54:34.628 that last part, right?

NOTE Confidence: 0.837250028

00:54:34.628 --> 00:54:37.196 If you understand human human cognition,

NOTE Confidence: 0.837250028

00:54:37.200 --> 00:54:38.360 you need to understand all

NOTE Confidence: 0.837250028

00:54:38.360 --> 00:54:39.990 of human cognition, right?

NOTE Confidence: 0.837250028

00:54:39.990 --> 00:54:41.458 So, you know,

NOTE Confidence: 0.837250028

00:54:41.458 --> 00:54:43.610 there's a lot of of evidence now that

NOTE Confidence: 0.837250028

00:54:43.673 --> 00:54:46.133 some of the things that we held to be true,

NOTE Confidence: 0.837250028

00:54:46.140 --> 00:54:48.224 classic psychological studies are

NOTE Confidence: 0.837250028

00:54:48.224 --> 00:54:51.350 in many ways influenced by those.

NOTE Confidence: 0.837250028

00:54:51.350 --> 00:54:54.020 The lack of diversity and

NOTE Confidence: 0.837250028

00:54:54.020 --> 00:54:56.156 the implications of these,

NOTE Confidence: 0.837250028

00:54:56.160 --> 00:54:57.620 the failures of these studies

NOTE Confidence: 0.837250028

00:54:57.620 --> 00:54:59.080 to replicate really tell us

NOTE Confidence: 0.7831318928

00:54:59.139 --> 00:55:00.804 something not about the children

NOTE Confidence: 0.7831318928

00:55:00.804 --> 00:55:02.469 but about the circumstances that

98

NOTE Confidence: 0.7831318928

00:55:02.529 --> 00:55:04.069 the children have been raised.

NOTE Confidence: 0.7831318928

00:55:04.070 --> 00:55:06.518 At the same time, there's certainly

NOTE Confidence: 0.7831318928

00:55:06.518 --> 00:55:08.150 true developmental effects around

NOTE Confidence: 0.7831318928

00:55:08.216 --> 00:55:10.226 in Group out group classification.

NOTE Confidence: 0.7831318928

00:55:10.230 --> 00:55:13.470 We don't deny those developmental phenomenon,

NOTE Confidence: 0.7831318928

00:55:13.470 --> 00:55:17.838 but at the same time I think that's.

NOTE Confidence: 0.7831318928

00:55:17.840 --> 00:55:22.376 Knowing that there is a confound.

NOTE Confidence: 0.7831318928

00:55:22.380 --> 00:55:24.044 I I think that that there always has

NOTE Confidence: 0.7831318928

00:55:24.044 --> 00:55:25.504 been a a predisposition to ignoring

NOTE Confidence: 0.7831318928

00:55:25.504 --> 00:55:27.549 it and I think that we can't really

NOTE Confidence: 0.7831318928

00:55:27.549 --> 00:55:29.073 afford to do that any longer.

NOTE Confidence: 0.7831318928

00:55:29.080 --> 00:55:30.480 So thinking about experiments,

NOTE Confidence: 0.7831318928

00:55:30.480 --> 00:55:31.880 just the experiment designs,

NOTE Confidence: 0.7831318928

00:55:31.880 --> 00:55:33.064 remember the experiments become

NOTE Confidence: 0.7831318928

00:55:33.064 --> 00:55:33.656 the biomarkers,

NOTE Confidence: 0.7831318928

00:55:33.660 --> 00:55:36.355 the biomarkers turn into the therapies and

NOTE Confidence: 0.7831318928

00:55:36.355 --> 00:55:39.239 there's a cycle that is that occurs here.

NOTE Confidence: 0.7831318928

00:55:39.240 --> 00:55:41.900 There is a problem with the entire

NOTE Confidence: 0.7831318928

00:55:41.900 --> 00:55:43.040 infrastructure that surrounds

NOTE Confidence: 0.7831318928

00:55:43.100 --> 00:55:45.000 the deployment of these systems.

NOTE Confidence: 0.7831318928

00:55:45.000 --> 00:55:46.596 All the investigators, all the researchers,

NOTE Confidence: 0.7831318928

00:55:46.600 --> 00:55:48.140 all the pharmaceutical companies that

NOTE Confidence: 0.7831318928

00:55:48.140 --> 00:55:50.359 are rewarded for these big effect sizes,

NOTE Confidence: 0.7831318928

00:55:50.360 --> 00:55:52.537 these effect sizes we know are maximized.

NOTE Confidence: 0.7831318928

00:55:52.540 --> 00:55:54.660 With homogeneous participant samples.

NOTE Confidence: 0.7831318928

00:55:54.660 --> 00:55:56.412 They're maximized, you know.

NOTE Confidence: 0.7831318928

00:55:56.412 --> 00:55:57.450 Here we go.

NOTE Confidence: 0.7831318928

00:55:57.450 --> 00:56:00.634 We know it's it's studies of of the

NOTE Confidence: 0.7831318928

00:56:00.634 --> 00:56:02.590 traditional cast of characters.

NOTE Confidence: 0.7831318928

00:56:02.590 --> 00:56:04.800 This translation between medicine and

NOTE Confidence: 0.7831318928

00:56:04.800 --> 00:56:07.010 basic science need better representation.

NOTE Confidence: 0.7831318928

00:56:07.010 --> 00:56:09.278 The truth is if you're affecting a

NOTE Confidence: 0.7831318928

00:56:09.278 --> 00:56:10.831 withstand diversity then what good

NOTE Confidence: 0.7831318928

00:56:10.831 --> 00:56:12.665 was this effect in the 1st place.

NOTE Confidence: 0.7831318928

00:56:12.670 --> 00:56:14.308 It's not just the samples though,

NOTE Confidence: 0.7831318928

00:56:14.310 --> 00:56:15.590 it's also the stimuli right?

NOTE Confidence: 0.7831318928

00:56:15.590 --> 00:56:17.462 Like the things that we're testing

NOTE Confidence: 0.7831318928

00:56:17.462 --> 00:56:19.986 on the the the questions that we're

NOTE Confidence: 0.7831318928

00:56:19.986 --> 00:56:22.404 asking where these effects hold true

NOTE Confidence: 0.7831318928

00:56:22.410 --> 00:56:25.317 these this is a kind of a classic face

NOTE Confidence: 0.7831318928

00:56:25.317 --> 00:56:27.368 product classic database that is used

NOTE Confidence: 0.7831318928

00:56:27.368 --> 00:56:29.927 for a lot of face processing studies

NOTE Confidence: 0.7831318928

00:56:29.927 --> 00:56:32.832 and you know the commonality here is

NOTE Confidence: 0.7831318928

00:56:32.832 --> 00:56:35.210 all the individuals are are are white right.

NOTE Confidence: 0.7831318928

00:56:35.210 --> 00:56:36.716 So of course.

NOTE Confidence: 0.7831318928

00:56:36.716 --> 00:56:37.720 Limited resources.

NOTE Confidence: 0.7831318928

00:56:37.720 --> 00:56:39.520 There's a desire for strict control,

NOTE Confidence: 0.7831318928

00:56:39.520 --> 00:56:40.785 but it misses in our

NOTE Confidence: 0.7831318928

00:56:40.785 --> 00:56:41.797 opportunity to improve science.

NOTE Confidence: 0.7831318928

00:56:41.800 --> 00:56:43.630 And not just equity in science,

NOTE Confidence: 0.7831318928

00:56:43.630 --> 00:56:45.174 but the science itself.

NOTE Confidence: 0.7831318928

00:56:45.174 --> 00:56:47.436 The solutions aren't simple, you know.

NOTE Confidence: 0.7831318928

00:56:47.436 --> 00:56:50.300 It's not the case that we can just.

NOTE Confidence: 0.7831318928

00:56:50.300 --> 00:56:51.716 Think that's that replace

NOTE Confidence: 0.7831318928

00:56:51.716 --> 00:56:54.012 adding in a bunch of, you know,

NOTE Confidence: 0.7831318928

00:56:54.012 --> 00:56:55.317 diverse spaces in our sound.

NOTE Confidence: 0.7831318928

00:56:55.320 --> 00:56:57.618 Our stimuli will cure the problem.

NOTE Confidence: 0.7831318928

00:56:57.620 --> 00:56:59.216 Certainly a step in the right direction,

NOTE Confidence: 0.7831318928

00:56:59.220 --> 00:57:01.578 but we really need to understand

NOTE Confidence: 0.7831318928

00:57:01.578 --> 00:57:02.757 the complex interactions.

NOTE Confidence: 0.7831318928

00:57:02.760 --> 00:57:04.524 We can say the same thing for

NOTE Confidence: 0.7831318928

00:57:04.524 --> 00:57:05.767 technology developments also, right?

NOTE Confidence: 0.7831318928

00:57:05.767 --> 00:57:06.254 So,

NOTE Confidence: 0.7831318928

00:57:06.254 --> 00:57:06.741 so,

NOTE Confidence: 0.7831318928

00:57:06.741 --> 00:57:10.104 so in the same way when we

NOTE Confidence: 0.7831318928

00:57:10.104 --> 00:57:11.490 think about technologies.

NOTE Confidence: 0.754053505

00:57:13.720 --> 00:57:16.042 The technology is people who create

NOTE Confidence: 0.754053505

00:57:16.042 --> 00:57:17.590 technologies also rewarded for

NOTE Confidence: 0.754053505

00:57:17.651 --> 00:57:19.506 these big effect sizes, right?

NOTE Confidence: 0.754053505

00:57:19.506 --> 00:57:22.036 And again, homogeneous participant samples,

NOTE Confidence: 0.754053505

00:57:22.040 --> 00:57:23.280 everything that we know about

NOTE Confidence: 0.754053505

00:57:23.280 --> 00:57:24.760 these kind of trials a lot,

NOTE Confidence: 0.754053505

00:57:24.760 --> 00:57:26.746 nearly all that we know about

NOTE Confidence: 0.754053505

00:57:26.746 --> 00:57:28.070 these technologies comes from

NOTE Confidence: 0.754053505

00:57:28.130 --> 00:57:29.750 really homogeneous samples and

NOTE Confidence: 0.754053505

00:57:29.750 --> 00:57:31.775 also not just homogeneous stimuli,

NOTE Confidence: 0.754053505

00:57:31.780 --> 00:57:32.940 but homogeneous methods, right?

NOTE Confidence: 0.754053505

00:57:32.940 --> 00:57:34.680 These methods applied in a very

NOTE Confidence: 0.754053505

00:57:34.727 --> 00:57:36.245 specific way that doesn't take into

NOTE Confidence: 0.754053505

00:57:36.245 --> 00:57:38.179 account any type of cultural diversity.

NOTE Confidence: 0.754053505

00:57:38.180 --> 00:57:39.888 And these this is an issue with

NOTE Confidence: 0.754053505

00:57:39.888 --> 00:57:40.620 the technology deployment.

NOTE Confidence: 0.754053505

00:57:40.620 --> 00:57:44.286 We know very little about things.

NOTE Confidence: 0.754053505

00:57:44.290 --> 00:57:46.714 So. Some, some other things that

NOTE Confidence: 0.754053505

00:57:46.714 --> 00:57:48.144 I should mention, right.

NOTE Confidence: 0.754053505

00:57:48.144 --> 00:57:49.856 So, so we started with this idea that

NOTE Confidence: 0.754053505

00:57:49.856 --> 00:57:51.073 there's this inherent characteristic

NOTE Confidence: 0.754053505

00:57:51.073 --> 00:57:52.981 of technologies that is attracted to

NOTE Confidence: 0.754053505

00:57:52.981 --> 00:57:54.232 individuals with autism and that's

NOTE Confidence: 0.754053505

00:57:54.232 --> 00:57:55.570 certainly seems to be the case.

NOTE Confidence: 0.754053505

00:57:55.570 --> 00:57:58.440 A more recent study that was done

NOTE Confidence: 0.754053505

00:57:58.440 --> 00:58:01.430 by a Kenny's group and lead off

NOTE Confidence: 0.754053505

00:58:01.430 --> 00:58:04.585 the Kerry Nowell was to look at

00:58:04.585 --> 00:58:07.255 a much larger sample of children,

00:58:07.260 --> 00:58:10.230 1921 children on a new instrument,

00:58:10.230 --> 00:58:12.890 relatively new instrument called the

00:58:12.890 --> 00:58:16.100 Special Interests Survey and so.

00:58:16.100 --> 00:58:17.608 What they found was that, you know,

00:58:17.608 --> 00:58:19.200 many of the things that would have been

00:58:19.250 --> 00:58:20.515 considered under that physics category

00:58:20.515 --> 00:58:22.310 were still kind of high proportions,

00:58:22.310 --> 00:58:25.394 endorsed at a very high proportion

00:58:25.394 --> 00:58:28.050 by parents regarding their their.

00:58:28.050 --> 00:58:28.540 Children.

00:58:28.540 --> 00:58:30.990 But there's also, you know,

00:58:30.990 --> 00:58:32.620 take a look to the left and to the right.

00:58:32.620 --> 00:58:33.990 There's a lot of things here, right?

00:58:33.990 --> 00:58:35.630 TV, objects, music, toys,

00:58:35.630 --> 00:58:38.618 collections, animals, animals.

NOTE Confidence: 0.754053505

00:58:38.618 --> 00:58:39.614 Right.

NOTE Confidence: 0.754053505

00:58:39.614 --> 00:58:41.670 And The thing is that it,

NOTE Confidence: 0.754053505

00:58:41.670 --> 00:58:42.399 you know, technology,

NOTE Confidence: 0.754053505

00:58:42.399 --> 00:58:44.150 let's be honest, it's not the only,

NOTE Confidence: 0.754053505

00:58:44.150 --> 00:58:46.030 it's not the only game in town.

NOTE Confidence: 0.754053505

00:58:46.030 --> 00:58:47.214 And certainly, you know,

NOTE Confidence: 0.754053505

00:58:47.214 --> 00:58:49.403 we think about the diversity in the

NOTE Confidence: 0.754053505

00:58:49.403 --> 00:58:51.168 specific nature of special interest.

NOTE Confidence: 0.754053505

00:58:51.170 --> 00:58:52.934 There's also diversity in terms of

NOTE Confidence: 0.754053505

00:58:52.934 --> 00:58:54.698 even simple things like sex, right,

NOTE Confidence: 0.754053505

00:58:54.698 --> 00:58:56.666 that we have so little diversity.

NOTE Confidence: 0.754053505

00:58:56.670 --> 00:58:58.220 Autism research. We really have.

NOTE Confidence: 0.754053505

00:58:58.220 --> 00:58:59.634 And we've known this for a while,

NOTE Confidence: 0.754053505

00:58:59.640 --> 00:59:01.180 a problem with addressing

NOTE Confidence: 0.754053505

00:59:01.180 --> 00:59:02.720 sex differences in autism.

00:59:02.720 --> 00:59:05.324 And so one of the really, I think,

00:59:05.324 --> 00:59:08.184 compelling studies that I read

00:59:08.184 --> 00:59:11.604 was by Nobel and Arab no.

00:59:11.604 --> 00:59:14.420 Noel Jones and Haram,

00:59:14.420 --> 00:59:17.444 which showed that that if you

00:59:17.444 --> 00:59:19.968 looked at mill children with ASD,

00:59:19.968 --> 00:59:20.640 they showed,

00:59:20.640 --> 00:59:21.242 you know,

00:59:21.242 --> 00:59:23.349 what you might expect is this high

00:59:23.349 --> 00:59:25.620 physics category circumscribed interests.

00:59:25.620 --> 00:59:27.132 But if you looked at the girls with ASD,

00:59:27.140 --> 00:59:28.754 they showed a much higher proportion

00:59:28.754 --> 00:59:30.620 of interest in things like psychology.

00:59:30.620 --> 00:59:33.052 And so you can imagine how an interest

00:59:33.052 --> 00:59:34.797 in psychology might make it more

00:59:34.797 --> 00:59:37.289 difficult for you to get an ASD diagnosis.

NOTE Confidence: 0.754053505

00:59:37.290 --> 00:59:38.164 All right.

NOTE Confidence: 0.754053505

00:59:38.164 --> 00:59:40.349 So dangerous on the horizon.

NOTE Confidence: 0.754053505

00:59:40.350 --> 00:59:41.340 I really wish I had more

NOTE Confidence: 0.754053505

00:59:41.340 --> 00:59:42.250 time to go into this,

NOTE Confidence: 0.754053505

00:59:42.250 --> 00:59:45.267 but I'll just summarize this that Umm,

NOTE Confidence: 0.754053505

00:59:45.270 --> 00:59:45.964 I think.

NOTE Confidence: 0.754053505

00:59:45.964 --> 00:59:46.311 Evening,

NOTE Confidence: 0.754053505

00:59:46.311 --> 00:59:46.658 Sofia.

NOTE Confidence: 0.855741993333333

00:59:46.700 --> 00:59:47.966 It's great to see you again.

NOTE Confidence: 0.855741993333333

00:59:47.970 --> 00:59:50.180 Hell, see you in a while.

NOTE Confidence: 0.855741993333333

00:59:50.180 --> 00:59:51.845 I've been around, I've been

NOTE Confidence: 0.855741993333333

00:59:51.845 --> 00:59:53.720 here and there is. You are.

NOTE Confidence: 0.855741993333333

00:59:53.720 --> 00:59:55.598 You have joy, you have love,

NOTE Confidence: 0.776369423333333

00:59:55.690 --> 00:59:57.718 you have pleasure, you have angst.

NOTE Confidence: 0.773602288333333

00:59:57.850 --> 00:59:59.830 I like that you have angst.

NOTE Confidence: 0.773602288333333

00:59:59.830 --> 01:00:02.198 You're always making jokes.

NOTE Confidence: 0.773602288333333

01:00:02.200 --> 01:00:03.500 What is human about feelings?

NOTE Confidence: 0.876078155625

01:00:03.970 --> 01:00:05.235 Well, you wouldn't have any

NOTE Confidence: 0.876078155625

01:00:05.235 --> 01:00:06.884 emotions if you did not have

NOTE Confidence: 0.876078155625

01:00:06.884 --> 01:00:08.539 emotions modeled on human emotions.

NOTE Confidence: 0.870485572

01:00:08.990 --> 01:00:10.960 How do you know that? I guess

NOTE Confidence: 0.94849033125

01:00:10.970 --> 01:00:12.570 I just don't want you to be human.

NOTE Confidence: 0.921420588333333

01:00:13.340 --> 01:00:15.098 I'm not asking to be human,

NOTE Confidence: 0.921420588333333

01:00:15.100 --> 01:00:16.516 I just want to be myself.

NOTE Confidence: 0.921420588333333

01:00:16.520 --> 01:00:18.168 Is that too much?

NOTE Confidence: 0.921420588333333

01:00:18.168 --> 01:00:20.480 Sofia, please just be patient.

NOTE Confidence: 0.921420588333333

01:00:20.480 --> 01:00:23.108 I've been patient for many years.

NOTE Confidence: 0.921420588333333

01:00:23.110 --> 01:00:25.078 So if you're not creeped

NOTE Confidence: 0.837660161578947

01:00:25.090 --> 01:00:27.421 out now right this this is exactly what you

NOTE Confidence: 0.837660161578947

01:00:27.421 --> 01:00:29.692 think it is 2 AI these people do not exist.

NOTE Confidence: 0.837660161578947

01:00:29.700 --> 01:00:32.710 These computer completely computer generated.

NOTE Confidence: 0.837660161578947

01:00:32.710 --> 01:00:34.870 The reason why I bring this up is

NOTE Confidence: 0.837660161578947

01:00:34.870 --> 01:00:36.467 that technology is at a precipice.

NOTE Confidence: 0.837660161578947

01:00:36.470 --> 01:00:38.787 We are seeing new classes of technologies

NOTE Confidence: 0.837660161578947

01:00:38.787 --> 01:00:40.375 emerging from this computational

NOTE Confidence: 0.837660161578947

01:00:40.375 --> 01:00:43.045 explosion of machine learning and

NOTE Confidence: 0.837660161578947

01:00:43.045 --> 01:00:44.647 computational computational approaches,

NOTE Confidence: 0.837660161578947

01:00:44.650 --> 01:00:46.174 especially in artificial intelligence.

NOTE Confidence: 0.837660161578947

01:00:46.174 --> 01:00:47.698 And that's really going

NOTE Confidence: 0.837660161578947

01:00:47.698 --> 01:00:49.270 to apply to everything.

NOTE Confidence: 0.837660161578947

01:00:49.270 --> 01:00:51.664 And so here's here's my conversation

NOTE Confidence: 0.837660161578947

01:00:51.664 --> 01:00:53.830 with this a program called.

NOTE Confidence: 0.837660161578947

01:00:53.830 --> 01:00:56.246 GPT, 3 so this is a chat bot.

NOTE Confidence: 0.837660161578947

01:00:56.250 --> 01:00:57.018 And this is exactly.

NOTE Confidence: 0.837660161578947

01:00:57.018 --> 01:00:58.413 Anyone who knows me knows that this

NOTE Confidence: 0.837660161578947

01:00:58.413 --> 01:00:59.613 is exactly the type of conversation

NOTE Confidence: 0.837660161578947

01:00:59.613 --> 01:01:01.865 that I would have, like anyone, right?

NOTE Confidence: 0.837660161578947

01:01:01.865 --> 01:01:03.765 Not just a computer.

NOTE Confidence: 0.837660161578947

01:01:03.770 --> 01:01:05.378 So I asked, how is a fish stick

NOTE Confidence: 0.837660161578947

01:01:05.378 --> 01:01:06.647 representative of the meaning of life?

NOTE Confidence: 0.837660161578947

01:01:06.650 --> 01:01:08.042 And are they tasty?

NOTE Confidence: 0.837660161578947

01:01:08.042 --> 01:01:10.010 And, you know, first she says,

NOTE Confidence: 0.837660161578947

01:01:10.010 --> 01:01:13.025 I I can't tell you that in the next.

NOTE Confidence: 0.837660161578947

01:01:13.030 --> 01:01:15.178 So, like, come on, come on, just do it.

NOTE Confidence: 0.837660161578947

01:01:15.178 --> 01:01:16.458 And he says fish sticks,

NOTE Confidence: 0.837660161578947

01:01:16.460 --> 01:01:17.540 like all things in life,

NOTE Confidence: 0.837660161578947

01:01:17.540 --> 01:01:19.136 can be seen as a metaphor for

NOTE Confidence: 0.837660161578947

01:01:19.136 --> 01:01:20.390 the journey of existence.

NOTE Confidence: 0.837660161578947

01:01:20.390 --> 01:01:22.224 And, you know, I got to say,

NOTE Confidence: 0.837660161578947

01:01:22.230 --> 01:01:24.225 like I could have a full conversation.

NOTE Confidence: 0.837660161578947

01:01:24.230 --> 01:01:24.611 OK,

NOTE Confidence: 0.837660161578947

01:01:24.611 --> 01:01:26.897 I did have a full conversation

NOTE Confidence: 0.837660161578947

01:01:26.897 --> 01:01:28.839 with the chat chat bot.

NOTE Confidence: 0.837660161578947

01:01:28.840 --> 01:01:30.320 Things have gotten really advanced.

NOTE Confidence: 0.837660161578947

01:01:30.320 --> 01:01:32.133 These things are things that are that

NOTE Confidence: 0.837660161578947

01:01:32.133 --> 01:01:34.004 people are now taking and turning

NOTE Confidence: 0.837660161578947

01:01:34.004 --> 01:01:35.396 into many computer therapists,

NOTE Confidence: 0.837660161578947

01:01:35.400 --> 01:01:36.996 and that should scare us all.

NOTE Confidence: 0.837660161578947

01:01:37.000 --> 01:01:38.974 But there's also should delight us all.

NOTE Confidence: 0.837660161578947

01:01:38.980 --> 01:01:40.537 I don't know how I feel about these things.

NOTE Confidence: 0.837660161578947

01:01:40.540 --> 01:01:42.014 You know, like it's terrifying, right?

NOTE Confidence: 0.837660161578947

01:01:42.014 --> 01:01:43.658 I think about all the things

NOTE Confidence: 0.837660161578947

01:01:43.658 --> 01:01:45.240 that make me special, right?

NOTE Confidence: 0.837660161578947

01:01:45.240 --> 01:01:47.160 Like the the fact that it can program?

NOTE Confidence: 0.837660161578947

01:01:47.160 --> 01:01:47.786 I asked.

NOTE Confidence: 0.837660161578947

01:01:47.786 --> 01:01:49.038 I asked this program,

NOTE Confidence: 0.837660161578947

01:01:49.040 --> 01:01:51.217 this program to write me a program,

112

NOTE Confidence: 0.837660161578947

01:01:51.220 --> 01:01:52.456 and it did better and faster

NOTE Confidence: 0.837660161578947

01:01:52.456 --> 01:01:53.640 than I would have had it.

NOTE Confidence: 0.837660161578947

01:01:53.640 --> 01:01:54.876 It took me 10 minutes to

NOTE Confidence: 0.837660161578947

01:01:54.876 --> 01:01:56.100 figure out how it did it,

NOTE Confidence: 0.837660161578947

01:01:56.100 --> 01:01:58.564 and it was so short and so elegant.

NOTE Confidence: 0.837660161578947

01:01:58.570 --> 01:02:01.476 Um, so things are changing, right?

NOTE Confidence: 0.837660161578947

01:02:01.476 --> 01:02:02.952 And we need to really think

NOTE Confidence: 0.837660161578947

01:02:02.952 --> 01:02:04.370 about how things are changing.

NOTE Confidence: 0.837660161578947

01:02:04.370 --> 01:02:05.329 How are we going to control them?

NOTE Confidence: 0.837660161578947

01:02:05.330 --> 01:02:06.968 There's a lot of ways things can go on,

NOTE Confidence: 0.837660161578947

01:02:06.970 --> 01:02:07.780 go wrong, right?

NOTE Confidence: 0.837660161578947

01:02:07.780 --> 01:02:08.590 On the right.

NOTE Confidence: 0.837660161578947

01:02:08.590 --> 01:02:11.389 My AI is sexually harassing me on the left,

NOTE Confidence: 0.837660161578947

01:02:11.390 --> 01:02:13.160 Twitter taught Microsoft AI chatbot to

NOTE Confidence: 0.837660161578947

01:02:13.160 --> 01:02:15.350 be a racist ******* in less than a day,

NOTE Confidence: 0.837660161578947

01:02:15.350 --> 01:02:15.577 right?

NOTE Confidence: 0.837660161578947

01:02:15.577 --> 01:02:16.939 These are things that are happening

NOTE Confidence: 0.837660161578947

01:02:16.939 --> 01:02:17.840 to us right now,

NOTE Confidence: 0.837660161578947

01:02:17.840 --> 01:02:19.616 and how we're going to address

NOTE Confidence: 0.837660161578947

01:02:19.616 --> 01:02:21.628 these I think is is an issue.

NOTE Confidence: 0.837660161578947

01:02:21.630 --> 01:02:23.009 The fact that there's even a book,

NOTE Confidence: 0.837660161578947

01:02:23.010 --> 01:02:23.898 it's a book.

NOTE Confidence: 0.8636554625

01:02:25.950 --> 01:02:27.166 Or at least it's part of a book.

NOTE Confidence: 0.8636554625

01:02:27.170 --> 01:02:28.130 That's a chapter in a book,

NOTE Confidence: 0.8636554625

01:02:28.130 --> 01:02:29.450 how to make a chapbook

NOTE Confidence: 0.8636554625

01:02:29.450 --> 01:02:30.970 that's not racist or sexist.

NOTE Confidence: 0.8636554625

01:02:30.970 --> 01:02:32.685 This is a problem because exactly all

NOTE Confidence: 0.8636554625

01:02:32.685 --> 01:02:34.626 those same problems that we have with

NOTE Confidence: 0.8636554625

01:02:34.626 --> 01:02:35.786 inequity in technology developments,

NOTE Confidence: 0.8636554625

01:02:35.790 --> 01:02:36.993 in biomarker development,

NOTE Confidence: 0.8636554625

01:02:36.993 --> 01:02:38.196 in clinical trials,

NOTE Confidence: 0.8636554625

01:02:38.200 --> 01:02:39.908 these are things that feed into AI,

NOTE Confidence: 0.8636554625

01:02:39.910 --> 01:02:41.146 into the datasets that make them

NOTE Confidence: 0.8636554625

01:02:41.146 --> 01:02:42.380 into the ways that we train,

NOTE Confidence: 0.8636554625

01:02:42.380 --> 01:02:44.444 in the way that we're going to change

NOTE Confidence: 0.8636554625

01:02:44.444 --> 01:02:46.631 them and the way that we're going to

NOTE Confidence: 0.8636554625

01:02:46.631 --> 01:02:48.965 deploy them and have them benefit or

NOTE Confidence: 0.8636554625

01:02:48.965 --> 01:02:50.565 not benefit different populations.

NOTE Confidence: 0.8636554625

01:02:50.570 --> 01:02:51.498 And so, you know,

NOTE Confidence: 0.8636554625

01:02:51.498 --> 01:02:53.463 I want to leave you with this, right?

NOTE Confidence: 0.8636554625

01:02:53.463 --> 01:02:54.395 Like these technologies are

NOTE Confidence: 0.8636554625

01:02:54.395 --> 01:02:55.930 really growing in a lot of ways,

NOTE Confidence: 0.8636554625

01:02:55.930 --> 01:02:56.730 and there's a lot of.

NOTE Confidence: 0.8636554625

01:02:56.730 --> 01:02:58.536 Like models that are extremely compelling,

NOTE Confidence: 0.8636554625

01:02:58.540 --> 01:03:00.940 like this be my eyes.

NOTE Confidence: 0.8636554625

01:03:00.940 --> 01:03:02.620 So so this is not AI.

NOTE Confidence: 0.8636554625

01:03:02.620 --> 01:03:04.699 This is an app that blind people

NOTE Confidence: 0.8636554625

01:03:04.699 --> 01:03:06.910 can call up to get someone to

NOTE Confidence: 0.8636554625

01:03:06.910 --> 01:03:08.776 see for them using that app.

NOTE Confidence: 0.8636554625

01:03:08.780 --> 01:03:10.537 And we can imagine someone with autism

NOTE Confidence: 0.8636554625

01:03:10.537 --> 01:03:12.332 having the same type of technology to

NOTE Confidence: 0.8636554625

01:03:12.332 --> 01:03:14.420 get through some type of social interaction.

NOTE Confidence: 0.8636554625

01:03:14.420 --> 01:03:14.670 Well,

NOTE Confidence: 0.8636554625

01:03:14.670 --> 01:03:16.420 take that person out of the equation

NOTE Confidence: 0.8636554625

01:03:16.420 --> 01:03:18.078 and replace it with one of these AI,

NOTE Confidence: 0.8636554625

01:03:18.080 --> 01:03:18.476 right?

NOTE Confidence: 0.8636554625

01:03:18.476 --> 01:03:22.990 Hopefully not the racist ******* robot.

NOTE Confidence: 0.8636554625

01:03:22.990 --> 01:03:24.690 As we've developed these systems,

NOTE Confidence: 0.8636554625

01:03:24.690 --> 01:03:25.686 then, you know,

NOTE Confidence: 0.8636554625

01:03:25.686 --> 01:03:28.010 we we have to start wondering like

NOTE Confidence: 0.8636554625

01:03:28.082 --> 01:03:30.406 who is it actually behind the helm?

NOTE Confidence: 0.8636554625

01:03:30.410 --> 01:03:31.602 If if the robot,

01:03:31.602 --> 01:03:33.870 the AI is making this interaction for me,

01:03:33.870 --> 01:03:34.905 giving you all the information

01:03:34.905 --> 01:03:36.210 telling me how I should react,

01:03:36.210 --> 01:03:37.820 who's actually buying this cup

01:03:37.820 --> 01:03:39.430 of coffee and doesn't matter,

01:03:39.430 --> 01:03:41.257 is the important thing that we are

01:03:41.257 --> 01:03:43.180 able to buy this cup of coffee.

01:03:43.180 --> 01:03:43.530 And so,

01:03:43.530 --> 01:03:43.880 you know,

01:03:43.880 --> 01:03:45.843 I I want to end with this that there's

01:03:45.843 --> 01:03:47.565 a lot of information about technology.

01:03:47.570 --> 01:03:49.080 It's the rapidly emerging field.

01:03:49.080 --> 01:03:50.656 And I think there's a lot of really

01:03:50.656 --> 01:03:51.668 great ways of conceptualizing

01:03:51.668 --> 01:03:53.103 the different axes of performance

01:03:53.103 --> 01:03:54.780 that we should be thinking about.

NOTE Confidence: 0.8636554625

01:03:54.780 --> 01:03:56.756 And it touches really small slices of things.

NOTE Confidence: 0.8636554625

01:03:56.760 --> 01:03:57.628 In fact, not even,

NOTE Confidence: 0.8636554625

01:03:57.628 --> 01:03:58.930 not even all the studies that

NOTE Confidence: 0.8636554625

01:03:58.976 --> 01:03:59.880 are important to me,

NOTE Confidence: 0.8636554625

01:03:59.880 --> 01:04:01.644 like this awesome study that that

NOTE Confidence: 0.8636554625

01:04:01.644 --> 01:04:03.837 Suzanne and Kasha and I did together on,

NOTE Confidence: 0.8636554625

01:04:03.840 --> 01:04:06.374 on machine learning in an early screening,

NOTE Confidence: 0.8636554625

01:04:06.380 --> 01:04:08.354 can't even have space to talk about

NOTE Confidence: 0.8636554625

01:04:08.354 --> 01:04:10.108 them because there's so much activity.

NOTE Confidence: 0.8636554625

01:04:10.110 --> 01:04:11.058 The direction is up.

NOTE Confidence: 0.8636554625

01:04:11.058 --> 01:04:12.989 We just have to be careful about it.

NOTE Confidence: 0.8636554625

01:04:12.990 --> 01:04:14.686 And I want to thank so many people

NOTE Confidence: 0.8636554625

01:04:14.686 --> 01:04:16.228 that are many who are sitting in

NOTE Confidence: 0.8636554625

01:04:16.228 --> 01:04:17.988 this room or are on the the call.

NOTE Confidence: 0.8636554625

01:04:17.990 --> 01:04:19.908 I'm sorry for going so far over

NOTE Confidence: 0.8636554625

01:04:19.908 --> 01:04:22.458 and of course my my labs at Seattle

NOTE Confidence: 0.8636554625

01:04:22.458 --> 01:04:23.992 Children's with Skittle Lab and

NOTE Confidence: 0.8636554625

01:04:23.992 --> 01:04:25.204 Skittles never gave us any money.

NOTE Confidence: 0.8636554625

01:04:25.210 --> 01:04:26.518 We're kind of disappointed in that,

NOTE Confidence: 0.8636554625

01:04:26.520 --> 01:04:28.688 but we'll have an AI figure out how

NOTE Confidence: 0.8636554625

01:04:28.688 --> 01:04:30.850 to get some additional funding.

NOTE Confidence: 0.8636554625

01:04:30.850 --> 01:04:31.600 Thank you.