

WEBVTT

NOTE duration:"00:55:02.2080000"

NOTE language:en-us

NOTE Confidence: 0.8631226

00:00:00.000 --> 00:00:02.560 I'm so excited to share with you the

NOTE Confidence: 0.8631226

00:00:02.560 --> 00:00:05.675 body of work I've been engaged in with

NOTE Confidence: 0.8631226

00:00:05.675 --> 00:00:08.658 primates for really over the last 20 years,

NOTE Confidence: 0.8631226

00:00:08.660 --> 00:00:11.612 so please bear with me for one moment while

NOTE Confidence: 0.8631226

00:00:11.612 --> 00:00:14.620 I finalize my screen sharing and I just

NOTE Confidence: 0.8631226

00:00:14.620 --> 00:00:17.559 need to click a few more buttons here.

NOTE Confidence: 0.8631226

00:00:17.560 --> 00:00:20.052 So please enjoy this lovely photo of

NOTE Confidence: 0.8631226

00:00:20.052 --> 00:00:22.190 a monkey, Mother, infant and mom.

NOTE Confidence: 0.80504614

00:00:27.240 --> 00:00:28.110 OK.

NOTE Confidence: 0.54492307

00:00:42.620 --> 00:00:43.290 Great.

NOTE Confidence: 0.8785873

00:00:45.730 --> 00:00:48.354 So I'm so excited to talk today about

NOTE Confidence: 0.8785873

00:00:48.354 --> 00:00:50.034 the intergenerational effects of secure

NOTE Confidence: 0.8785873

00:00:50.034 --> 00:00:52.288 attachment in rhesus monkeys and what we

NOTE Confidence: 0.8785873

00:00:52.350 --> 00:00:54.516 can learn from studying primate models.

NOTE Confidence: 0.8785873

00:00:54.520 --> 00:00:56.956 But first, before I get into that

NOTE Confidence: 0.8785873

00:00:56.956 --> 00:00:59.587 work and the work that led to it,

NOTE Confidence: 0.8785873

00:00:59.590 --> 00:01:02.174 I think it's really important to put this

NOTE Confidence: 0.8785873

00:01:02.174 --> 00:01:05.325 body of research into context and to do that,

NOTE Confidence: 0.8785873

00:01:05.330 --> 00:01:08.326 we're going to start at Green Park.

NOTE Confidence: 0.8785873

00:01:08.330 --> 00:01:10.178 Probably many of you are wondering

NOTE Confidence: 0.8785873

00:01:10.178 --> 00:01:12.139 what the heck is going park.

NOTE Confidence: 0.8785873

00:01:12.140 --> 00:01:14.756 Hogan Park was the name of the psychology

NOTE Confidence: 0.8785873

00:01:14.756 --> 00:01:16.900 Department at University of Wisconsin,

NOTE Confidence: 0.8785873

00:01:16.900 --> 00:01:18.735 Madison and its street address

NOTE Confidence: 0.8785873

00:01:18.735 --> 00:01:20.920 was actually 600 N Park Ave.

NOTE Confidence: 0.8785873

00:01:20.920 --> 00:01:23.468 But when people would quickly scrawl the

NOTE Confidence: 0.8785873

00:01:23.468 --> 00:01:26.433 address back in the middle of the last

NOTE Confidence: 0.8785873

00:01:26.433 --> 00:01:28.542 century early last century, you know,

NOTE Confidence: 0.8785873

00:01:28.542 --> 00:01:30.528 for intercampus Mail they would write

NOTE Confidence: 0.8785873

00:01:30.528 --> 00:01:32.997 600 and Park Anna sloppy handwriting.
NOTE Confidence: 0.8785873

00:01:33.000 --> 00:01:35.656 It looks like Goon Park and the nickname
NOTE Confidence: 0.8785873

00:01:35.656 --> 00:01:38.386 just stuck and so even though the building
NOTE Confidence: 0.8785873

00:01:38.386 --> 00:01:41.420 has long since been demolished and renovated,
NOTE Confidence: 0.8785873

00:01:41.420 --> 00:01:42.076 the address.
NOTE Confidence: 0.8785873

00:01:42.076 --> 00:01:44.700 Is still the same and good park is
NOTE Confidence: 0.8785873

00:01:44.776 --> 00:01:47.366 important because it sets the stage for
NOTE Confidence: 0.8785873

00:01:47.366 --> 00:01:50.507 the work that will be talking about today.
NOTE Confidence: 0.8785873

00:01:50.510 --> 00:01:52.532 It's also the location for this
NOTE Confidence: 0.8785873

00:01:52.532 --> 00:01:54.702 fabulous book which I recommend to
NOTE Confidence: 0.8785873

00:01:54.702 --> 00:01:57.327 everybody here called Love at Goon Park.
NOTE Confidence: 0.8785873

00:01:57.330 --> 00:01:59.155 Written by Pulitzer Prize winning
NOTE Confidence: 0.8785873

00:01:59.155 --> 00:02:00.615 journalist and science writer
NOTE Confidence: 0.8785873

00:02:00.615 --> 00:02:01.639 extraordinaire Deborah Blum,
NOTE Confidence: 0.8785873

00:02:01.640 --> 00:02:04.862 here's a little bit about that book for Eons,
NOTE Confidence: 0.8785873

00:02:04.870 --> 00:02:07.734 Love was the province of poets and Dreamers.

NOTE Confidence: 0.8785873

00:02:07.740 --> 00:02:09.172 Scientists considered it unworthy

NOTE Confidence: 0.8785873

00:02:09.172 --> 00:02:10.246 of real study,

NOTE Confidence: 0.8785873

00:02:10.250 --> 00:02:13.114 yet in the middle of the last century,

NOTE Confidence: 0.8785873

00:02:13.120 --> 00:02:14.990 one scientist had the courage.

NOTE Confidence: 0.8785873

00:02:14.990 --> 00:02:16.745 And the curiosity to uncover

NOTE Confidence: 0.8785873

00:02:16.745 --> 00:02:18.500 the true power of love.

NOTE Confidence: 0.8785873

00:02:18.500 --> 00:02:20.586 And he forever changed the way we

NOTE Confidence: 0.8785873

00:02:20.586 --> 00:02:22.360 think about human relationships.

NOTE Confidence: 0.8785873

00:02:22.360 --> 00:02:24.466 This is the story of that

NOTE Confidence: 0.8785873

00:02:24.466 --> 00:02:25.168 great transformation.

NOTE Confidence: 0.8785873

00:02:25.170 --> 00:02:26.313 And in fact,

NOTE Confidence: 0.8785873

00:02:26.313 --> 00:02:28.218 that one human whom she

NOTE Confidence: 0.8785873

00:02:28.218 --> 00:02:30.378 writes about was Harry Harlow.

NOTE Confidence: 0.8785873

00:02:30.380 --> 00:02:33.124 Now, although he died almost 40 years ago,

NOTE Confidence: 0.8785873

00:02:33.130 --> 00:02:34.850 Harry Harlow had a lasting

NOTE Confidence: 0.8785873

00:02:34.850 --> 00:02:36.226 impact on the science.
NOTE Confidence: 0.8785873

00:02:36.230 --> 00:02:38.974 We do the treatments we give to children,
NOTE Confidence: 0.8785873

00:02:38.980 --> 00:02:40.177 and most importantly,
NOTE Confidence: 0.8785873

00:02:40.177 --> 00:02:42.571 what we know to be true
NOTE Confidence: 0.8785873

00:02:42.571 --> 00:02:44.380 about children's needs.
NOTE Confidence: 0.8785873

00:02:44.380 --> 00:02:47.548 Now Harlow is best known for his now
NOTE Confidence: 0.8785873

00:02:47.548 --> 00:02:49.978 controversial studies on maternal separation,
NOTE Confidence: 0.8785873

00:02:49.980 --> 00:02:51.604 like social isolation Ring,
NOTE Confidence: 0.8785873

00:02:51.604 --> 00:02:54.040 which is depicted here in which
NOTE Confidence: 0.8785873

00:02:54.109 --> 00:02:56.364 infant monkeys would be reared
NOTE Confidence: 0.8785873

00:02:56.364 --> 00:02:58.168 in complete total isolation.
NOTE Confidence: 0.8785873

00:02:58.170 --> 00:02:59.520 No visual, auditory,
NOTE Confidence: 0.8785873

00:02:59.520 --> 00:03:02.670 or tactile access to any other animals
NOTE Confidence: 0.8785873

00:03:02.751 --> 00:03:05.495 for periods ranging up to 12 months.
NOTE Confidence: 0.8785873

00:03:05.500 --> 00:03:07.224 These studies actually followed
NOTE Confidence: 0.8785873

00:03:07.224 --> 00:03:08.948 his very earliest studies,

NOTE Confidence: 0.8785873

00:03:08.950 --> 00:03:11.946 which he's also known for into attachment

NOTE Confidence: 0.8785873

00:03:11.946 --> 00:03:14.640 by studying monkeys on attachments too.

NOTE Confidence: 0.8785873

00:03:14.640 --> 00:03:16.053 Inanimate surrogate mothers

NOTE Confidence: 0.8785873

00:03:16.053 --> 00:03:18.879 covered in a soft fuzzy cloth.

NOTE Confidence: 0.8785873

00:03:18.880 --> 00:03:19.232 Ann,

NOTE Confidence: 0.8785873

00:03:19.232 --> 00:03:21.696 it's important to know that these studies

NOTE Confidence: 0.8785873

00:03:21.696 --> 00:03:24.326 were not so controversial at the time.

NOTE Confidence: 0.8785873

00:03:24.330 --> 00:03:26.140 In the 1950s and 60s,

NOTE Confidence: 0.8785873

00:03:26.140 --> 00:03:28.303 because but they are now and the

NOTE Confidence: 0.8785873

00:03:28.303 --> 00:03:31.262 reason for that is that we need to

NOTE Confidence: 0.8785873

00:03:31.262 --> 00:03:32.834 recognize that scientific standards

NOTE Confidence: 0.8785873

00:03:32.834 --> 00:03:35.158 change overtime as we gain knowledge

NOTE Confidence: 0.8785873

00:03:35.158 --> 00:03:37.393 an this includes the ethical standards.

NOTE Confidence: 0.8785873

00:03:37.393 --> 00:03:40.297 Now, for a look into how ethical standards,

NOTE Confidence: 0.8785873

00:03:40.300 --> 00:03:42.110 and also oversight, has changed.

NOTE Confidence: 0.8785873

00:03:42.110 --> 00:03:45.740 I mean, just take a look at that PPE right?

NOTE Confidence: 0.8785873

00:03:45.740 --> 00:03:47.232 He's not wearing any,

NOTE Confidence: 0.8785873

00:03:47.232 --> 00:03:49.470 and there's no way it that.

NOTE Confidence: 0.8785873

00:03:49.470 --> 00:03:51.384 Anybody now could walk up to

NOTE Confidence: 0.8785873

00:03:51.384 --> 00:03:52.660 any monkey in it

NOTE Confidence: 0.86226094

00:03:52.736 --> 00:03:54.440 in their street clothes?

NOTE Confidence: 0.86226094

00:03:54.440 --> 00:03:56.925 So not only has PPE standards change,

NOTE Confidence: 0.86226094

00:03:56.930 --> 00:03:59.506 but the way we treat the animals that

NOTE Confidence: 0.86226094

00:03:59.506 --> 00:04:02.155 we work with and the types of research

NOTE Confidence: 0.86226094

00:04:02.155 --> 00:04:05.090 that we can do have evolved overtime.

NOTE Confidence: 0.86226094

00:04:05.090 --> 00:04:07.470 And in fact there is very strict

NOTE Confidence: 0.86226094

00:04:07.470 --> 00:04:09.000 oversight at multiple levels.

NOTE Confidence: 0.86226094

00:04:09.000 --> 00:04:10.392 Anybody conducting monkey research

NOTE Confidence: 0.86226094

00:04:10.392 --> 00:04:12.963 has to adhere by law by federal

NOTE Confidence: 0.86226094

00:04:12.963 --> 00:04:15.038 law to institutional oversight and

NOTE Confidence: 0.86226094

00:04:15.038 --> 00:04:17.360 multiple levels of federal oversight.

NOTE Confidence: 0.86226094

00:04:17.360 --> 00:04:19.760 And so, along with the change

NOTE Confidence: 0.86226094

00:04:19.760 --> 00:04:20.960 in ethical standards,

NOTE Confidence: 0.86226094

00:04:20.960 --> 00:04:23.360 the science has changed as well.

NOTE Confidence: 0.86226094

00:04:23.360 --> 00:04:25.508 Now most people don't know that

NOTE Confidence: 0.86226094

00:04:25.508 --> 00:04:27.479 for several decades before his

NOTE Confidence: 0.86226094

00:04:27.479 --> 00:04:29.359 experimental work into attachment,

NOTE Confidence: 0.86226094

00:04:29.360 --> 00:04:31.360 Harlow actually studied learning cognition.

NOTE Confidence: 0.86226094

00:04:31.360 --> 00:04:33.760 An even neural function in monkeys.

NOTE Confidence: 0.86226094

00:04:33.760 --> 00:04:37.064 So for the first few decades of his

NOTE Confidence: 0.86226094

00:04:37.064 --> 00:04:39.756 career working first at a nearby zoo,

NOTE Confidence: 0.86226094

00:04:39.760 --> 00:04:42.160 but then developing his own lab,

NOTE Confidence: 0.86226094

00:04:42.160 --> 00:04:44.560 he studied cognitive abilities in primates,

NOTE Confidence: 0.86226094

00:04:44.560 --> 00:04:47.500 and he discovered that monkeys were far

NOTE Confidence: 0.86226094

00:04:47.500 --> 00:04:49.818 more cognitively complex than rats were.

NOTE Confidence: 0.86226094

00:04:49.820 --> 00:04:50.106 Again,

NOTE Confidence: 0.86226094

00:04:50.106 --> 00:04:52.394 we didn't know that at the time and

NOTE Confidence: 0.86226094

00:04:52.394 --> 00:04:54.541 they could form complex learning

NOTE Confidence: 0.86226094

00:04:54.541 --> 00:04:56.337 and problem solving strategies.

NOTE Confidence: 0.86226094

00:04:56.340 --> 00:04:56.940 That is,

NOTE Confidence: 0.86226094

00:04:56.940 --> 00:04:59.040 they could learn to learn and the

NOTE Confidence: 0.86226094

00:04:59.040 --> 00:05:00.919 way he devised this information

NOTE Confidence: 0.86226094

00:05:00.919 --> 00:05:03.187 is by developing a Now classic

NOTE Confidence: 0.86226094

00:05:03.258 --> 00:05:05.018 apparatus at least classic,

NOTE Confidence: 0.86226094

00:05:05.020 --> 00:05:06.628 to cognitive psychologists and

NOTE Confidence: 0.86226094

00:05:06.628 --> 00:05:07.834 comparative psychologists called

NOTE Confidence: 0.86226094

00:05:07.834 --> 00:05:09.392 the Wisconsin General Testing

NOTE Confidence: 0.86226094

00:05:09.392 --> 00:05:11.174 apparatus depicted here on the left,

NOTE Confidence: 0.86226094

00:05:11.180 --> 00:05:12.224 or the WDT,

NOTE Confidence: 0.86226094

00:05:12.224 --> 00:05:14.312 and this is important because it's

NOTE Confidence: 0.86226094

00:05:14.312 --> 00:05:16.608 going to make an appearance later,

NOTE Confidence: 0.86226094

00:05:16.610 --> 00:05:18.415 so Harlow and discovering how

NOTE Confidence: 0.86226094

00:05:18.415 --> 00:05:19.498 smart monkeys were.

NOTE Confidence: 0.86226094

00:05:19.500 --> 00:05:22.524 He wanted to study the ontogeny of learning.

NOTE Confidence: 0.86226094

00:05:22.530 --> 00:05:23.486 So to do this,

NOTE Confidence: 0.86226094

00:05:23.486 --> 00:05:25.390 he needed easy access to infant monkeys,

NOTE Confidence: 0.86226094

00:05:25.390 --> 00:05:27.800 so he started a nursery.

NOTE Confidence: 0.86226094

00:05:27.800 --> 00:05:29.921 And he observed that during the routine

NOTE Confidence: 0.86226094

00:05:29.921 --> 00:05:31.848 care and cleaning up these nursery

NOTE Confidence: 0.86226094

00:05:31.848 --> 00:05:33.762 monkeys where they had cloth diapers

NOTE Confidence: 0.86226094

00:05:33.762 --> 00:05:35.576 lining the bottoms of their cages.

NOTE Confidence: 0.86226094

00:05:35.580 --> 00:05:37.130 Whenever the diapers were removed,

NOTE Confidence: 0.86226094

00:05:37.130 --> 00:05:38.835 the infants would throw major

NOTE Confidence: 0.86226094

00:05:38.835 --> 00:05:40.873 tantrums and would only be sued

NOTE Confidence: 0.86226094

00:05:40.873 --> 00:05:43.033 when a new cloth diaper was put in.

NOTE Confidence: 0.86226094

00:05:43.040 --> 00:05:44.196 And so he thought.

NOTE Confidence: 0.86226094

00:05:44.196 --> 00:05:45.641 Could these monkeys be attached

NOTE Confidence: 0.86226094

00:05:45.641 --> 00:05:47.080 to their cloth diapers?
NOTE Confidence: 0.86226094

00:05:47.080 --> 00:05:49.768 And this in fact led to his series
NOTE Confidence: 0.86226094

00:05:49.768 --> 00:05:51.919 of studies in the next several
NOTE Confidence: 0.86226094

00:05:51.919 --> 00:05:54.025 decades for the rest of his
NOTE Confidence: 0.86226094

00:05:54.100 --> 00:05:56.488 career into affectional systems.
NOTE Confidence: 0.86226094

00:05:56.490 --> 00:05:58.035 Now it's impossible to overstate
NOTE Confidence: 0.86226094

00:05:58.035 --> 00:06:00.221 just how much we now take for
NOTE Confidence: 0.86226094

00:06:00.221 --> 00:06:01.969 granted that it is normal, natural,
NOTE Confidence: 0.86226094

00:06:01.969 --> 00:06:03.992 and necessary to touch and hug and
NOTE Confidence: 0.86226094

00:06:03.992 --> 00:06:06.249 hold our children and to nurture them,
NOTE Confidence: 0.86226094

00:06:06.250 --> 00:06:08.690 and not just for moms to do it,
NOTE Confidence: 0.86226094

00:06:08.690 --> 00:06:10.825 but for dads to do it too,
NOTE Confidence: 0.86226094

00:06:10.830 --> 00:06:13.270 and not just to do this in infancy,
NOTE Confidence: 0.86226094

00:06:13.270 --> 00:06:14.790 but across their whole lives,
NOTE Confidence: 0.86226094

00:06:14.790 --> 00:06:16.925 and not just to do it when
NOTE Confidence: 0.86226094

00:06:16.925 --> 00:06:17.840 they're behaving well,

NOTE Confidence: 0.86226094

00:06:17.840 --> 00:06:19.120 but maybe most importantly,

NOTE Confidence: 0.86226094

00:06:19.120 --> 00:06:21.638 when they are upset and need need that

NOTE Confidence: 0.86226094

00:06:21.638 --> 00:06:23.782 comfort most like you can see in this

NOTE Confidence: 0.86226094

00:06:23.848 --> 00:06:26.074 final picture here in the bottom right,

NOTE Confidence: 0.86226094

00:06:26.080 --> 00:06:28.348 where my husband is comforting her son.

NOTE Confidence: 0.86226094

00:06:28.350 --> 00:06:28.593 Sorry,

NOTE Confidence: 0.86226094

00:06:28.593 --> 00:06:30.537 the day we had to Bury our cat.

NOTE Confidence: 0.86226094

00:06:30.540 --> 00:06:33.690 It was emotional for all of us.

NOTE Confidence: 0.86226094

00:06:33.690 --> 00:06:35.538 So we take this for granted now,

NOTE Confidence: 0.86226094

00:06:35.540 --> 00:06:37.466 and it's because of Harlow's work

NOTE Confidence: 0.86226094

00:06:37.466 --> 00:06:40.258 that we now can take this for granted.

NOTE Confidence: 0.86226094

00:06:40.260 --> 00:06:42.213 And his work has also laid the

NOTE Confidence: 0.86226094

00:06:42.213 --> 00:06:44.188 foundation for the treatments we give.

NOTE Confidence: 0.86226094

00:06:44.190 --> 00:06:44.694 For example,

NOTE Confidence: 0.86226094

00:06:44.694 --> 00:06:46.710 to infants in the Nick you for the

NOTE Confidence: 0.85176957

00:06:46.768 --> 00:06:48.109 breast feeding practices,
NOTE Confidence: 0.85176957

00:06:48.110 --> 00:06:50.140 and also again for the ways that
NOTE Confidence: 0.85176957

00:06:50.140 --> 00:06:52.468 we care for children across their
NOTE Confidence: 0.85176957

00:06:52.468 --> 00:06:54.778 life spans and across generations.
NOTE Confidence: 0.85176957

00:06:54.780 --> 00:06:57.460 As I said, this was not always the
NOTE Confidence: 0.85176957

00:06:57.460 --> 00:06:59.740 document in the mid 20th century.
NOTE Confidence: 0.85176957

00:06:59.740 --> 00:07:02.281 Common dogma was that too much physical
NOTE Confidence: 0.85176957

00:07:02.281 --> 00:07:04.690 contact with children would make them weak,
NOTE Confidence: 0.85176957

00:07:04.690 --> 00:07:06.102 both physically via exposure
NOTE Confidence: 0.85176957

00:07:06.102 --> 00:07:07.514 to germs and psychologically.
NOTE Confidence: 0.85176957

00:07:07.520 --> 00:07:09.571 And you can see this quote from
NOTE Confidence: 0.85176957

00:07:09.571 --> 00:07:12.128 one of the fathers of behaviorism.
NOTE Confidence: 0.85176957

00:07:12.130 --> 00:07:14.594 In his book on Infant Child Care,
NOTE Confidence: 0.85176957

00:07:14.600 --> 00:07:16.676 you will soon be ashamed of
NOTE Confidence: 0.85176957

00:07:16.676 --> 00:07:18.485 the mawkish sentimental way you
NOTE Confidence: 0.85176957

00:07:18.485 --> 00:07:20.270 have been handling your child.

NOTE Confidence: 0.85176957
00:07:20.270 --> 00:07:22.628 Well, Harlow disagreed and based on
NOTE Confidence: 0.85176957
00:07:22.628 --> 00:07:25.639 what he observed in his infant monkeys.
NOTE Confidence: 0.85176957
00:07:25.640 --> 00:07:27.224 He stated in his first presentation
NOTE Confidence: 0.85176957
00:07:27.224 --> 00:07:29.271 of these findings to the American
NOTE Confidence: 0.85176957
00:07:29.271 --> 00:07:30.213 Psychological Association
NOTE Confidence: 0.85176957
00:07:30.213 --> 00:07:31.155 presidential address.
NOTE Confidence: 0.85176957
00:07:31.160 --> 00:07:33.920 He boldly stated there is more to mother.
NOTE Confidence: 0.85176957
00:07:33.920 --> 00:07:36.680 There is more to Mother love than milk,
NOTE Confidence: 0.85176957
00:07:36.680 --> 00:07:37.715 and that's perfectly
NOTE Confidence: 0.85176957
00:07:37.715 --> 00:07:39.440 illustrated by this image here,
NOTE Confidence: 0.85176957
00:07:39.440 --> 00:07:41.813 in which the infant monkey is maintaining
NOTE Confidence: 0.85176957
00:07:41.813 --> 00:07:43.907 as much physical contact as possible
NOTE Confidence: 0.85176957
00:07:43.907 --> 00:07:45.941 with a soft cloth surrogate mother
NOTE Confidence: 0.85176957
00:07:45.941 --> 00:07:48.410 and stretching over to drink from the
NOTE Confidence: 0.85176957
00:07:48.410 --> 00:07:50.825 bottle that's attached to the wire mother.
NOTE Confidence: 0.85176957

00:07:50.825 --> 00:07:51.860 And in fact,
NOTE Confidence: 0.85176957

00:07:51.860 --> 00:07:53.700 he also discovered that monkeys
NOTE Confidence: 0.85176957

00:07:53.700 --> 00:07:55.919 would learn to open windows just
NOTE Confidence: 0.85176957

00:07:55.919 --> 00:07:57.479 to get glimpses of their.
NOTE Confidence: 0.85176957

00:07:57.480 --> 00:07:58.530 Soft cloth covers.
NOTE Confidence: 0.85176957

00:07:58.530 --> 00:07:59.230 Surrogate mother.
NOTE Confidence: 0.8651896

00:08:01.430 --> 00:08:03.395 And so his studies really
NOTE Confidence: 0.8651896

00:08:03.395 --> 00:08:04.967 revolutionized the scientific thinking
NOTE Confidence: 0.8651896

00:08:04.967 --> 00:08:06.769 about socialization processes.
NOTE Confidence: 0.8651896

00:08:06.770 --> 00:08:09.000 Now around the same time,
NOTE Confidence: 0.8651896

00:08:09.000 --> 00:08:11.670 someone else was getting into attachment,
NOTE Confidence: 0.8651896

00:08:11.670 --> 00:08:14.058 and we're probably all very familiar
NOTE Confidence: 0.8651896

00:08:14.058 --> 00:08:17.010 with this father of attachment theory.
NOTE Confidence: 0.8651896

00:08:17.010 --> 00:08:18.566 British psychologist John Bowlby.
NOTE Confidence: 0.8651896

00:08:18.566 --> 00:08:21.690 I really hope that anyone here who works
NOTE Confidence: 0.8651896

00:08:21.690 --> 00:08:23.874 with children is familiar with John

NOTE Confidence: 0.8651896

00:08:23.874 --> 00:08:26.069 Bowlby's early theories of attachment,

NOTE Confidence: 0.8651896

00:08:26.070 --> 00:08:27.800 which also changed the way

NOTE Confidence: 0.8651896

00:08:27.800 --> 00:08:29.184 we think about children.

NOTE Confidence: 0.8651896

00:08:29.190 --> 00:08:30.900 However, Bowlby knew of no

NOTE Confidence: 0.8651896

00:08:30.900 --> 00:08:32.268 experiments that manipulated the

NOTE Confidence: 0.8651896

00:08:32.268 --> 00:08:33.699 potentially relevant variables in

NOTE Confidence: 0.8651896

00:08:33.699 --> 00:08:35.419 the domain of attachment formation,

NOTE Confidence: 0.8651896

00:08:35.420 --> 00:08:39.164 and that is to say he knew of no

NOTE Confidence: 0.8651896

00:08:39.164 --> 00:08:42.190 science to support his theories.

NOTE Confidence: 0.8651896

00:08:42.190 --> 00:08:43.369 Well, Fortunately enough,

NOTE Confidence: 0.8651896

00:08:43.369 --> 00:08:45.334 and this is something interesting

NOTE Confidence: 0.8651896

00:08:45.334 --> 00:08:47.210 I discovered in the research

NOTE Confidence: 0.8651896

00:08:47.210 --> 00:08:48.245 for this presentation.

NOTE Confidence: 0.8651896

00:08:48.250 --> 00:08:50.218 Turns out boldly in Harlem became

NOTE Confidence: 0.8651896

00:08:50.218 --> 00:08:52.406 friends and I really want to

NOTE Confidence: 0.8651896

00:08:52.406 --> 00:08:54.441 encourage everyone point you to
NOTE Confidence: 0.8651896

00:08:54.441 --> 00:08:56.210 this fascinating historical article.
NOTE Confidence: 0.8651896

00:08:56.210 --> 00:08:58.514 I love you Tana that talks about and
NOTE Confidence: 0.8651896

00:08:58.514 --> 00:09:01.042 really goes into detail about their
NOTE Confidence: 0.8651896

00:09:01.042 --> 00:09:02.461 professional correspondence that
NOTE Confidence: 0.8651896

00:09:02.461 --> 00:09:05.310 evolved giver, hug and kiss for me.
NOTE Confidence: 0.8651896

00:09:05.310 --> 00:09:05.681 OK,
NOTE Confidence: 0.8651896

00:09:05.681 --> 00:09:07.536 dad and collaboration give her
NOTE Confidence: 0.8651896

00:09:07.536 --> 00:09:09.480 a hug and kiss from.
NOTE Confidence: 0.7825027

00:09:15.490 --> 00:09:17.140 Amanda, can you unmute yourself? Sorry.
NOTE Confidence: 0.86047333

00:09:22.970 --> 00:09:24.245 OK, that's better.
NOTE Confidence: 0.86047333

00:09:24.245 --> 00:09:26.795 OK, so their correspondent started in
NOTE Confidence: 0.86047333

00:09:26.795 --> 00:09:29.852 1957 and in one of the first response is
NOTE Confidence: 0.86047333

00:09:29.852 --> 00:09:32.448 that Harry Harlow gave to John Bowlby,
NOTE Confidence: 0.86047333

00:09:32.450 --> 00:09:35.102 which is almost exactly 63 years
NOTE Confidence: 0.86047333

00:09:35.102 --> 00:09:37.734 ago to the day. Harlow rotatable be.

NOTE Confidence: 0.86047333

00:09:37.734 --> 00:09:38.598 It's an understatement.

NOTE Confidence: 0.86047333

00:09:38.600 --> 00:09:40.511 To add that we have research interests

NOTE Confidence: 0.86047333

00:09:40.511 --> 00:09:42.648 in common and from this point forward,

NOTE Confidence: 0.86047333

00:09:42.650 --> 00:09:44.666 the two greatly influenced each other's work.

NOTE Confidence: 0.86047333

00:09:44.670 --> 00:09:46.120 Bowlby sent Harlow, for example,

NOTE Confidence: 0.86047333

00:09:46.120 --> 00:09:48.232 a draft paper for which he would be

NOTE Confidence: 0.86047333

00:09:48.232 --> 00:09:50.049 most grateful for any comments and

NOTE Confidence: 0.86047333

00:09:50.049 --> 00:09:51.891 criticisms that Harlow care to make.

NOTE Confidence: 0.86047333

00:09:51.900 --> 00:09:53.916 What was the name of that paper?

NOTE Confidence: 0.86047333

00:09:53.920 --> 00:09:56.080 Well, it was his first draft of the

NOTE Confidence: 0.86047333

00:09:56.080 --> 00:09:58.546 nature of the child's tie to its mother,

NOTE Confidence: 0.86047333

00:09:58.550 --> 00:10:00.120 which he published in 19.

NOTE Confidence: 0.86047333

00:10:00.120 --> 00:10:01.989 58 and Harlow would refer to this

NOTE Confidence: 0.86047333

00:10:01.989 --> 00:10:03.780 paper as the reference Bible.

NOTE Confidence: 0.8378843

00:10:07.470 --> 00:10:09.440 And so, over the years,

NOTE Confidence: 0.8378843

00:10:09.440 --> 00:10:11.786 hard over the next several years,
NOTE Confidence: 0.8378843

00:10:11.790 --> 00:10:14.358 Harlows work his empirical findings on
NOTE Confidence: 0.8378843

00:10:14.358 --> 00:10:16.494 maternal separation provided Bowlby with
NOTE Confidence: 0.8378843

00:10:16.494 --> 00:10:19.406 evidence that he needed for his own knew
NOTE Confidence: 0.8378843

00:10:19.406 --> 00:10:20.950 conceptualisation of separation anxiety
NOTE Confidence: 0.8378843

00:10:20.950 --> 00:10:23.182 as a survival mechanism for infants,
NOTE Confidence: 0.8378843

00:10:23.190 --> 00:10:25.674 and particularly of the mother or
NOTE Confidence: 0.8378843

00:10:25.674 --> 00:10:28.492 caregiver as a haven of safety with
NOTE Confidence: 0.8378843

00:10:28.492 --> 00:10:31.012 a term which Harlow would use in
NOTE Confidence: 0.8378843

00:10:31.097 --> 00:10:32.877 subsequent publications or what
NOTE Confidence: 0.8378843

00:10:32.877 --> 00:10:35.547 we now call a secure base.
NOTE Confidence: 0.8378843

00:10:35.550 --> 00:10:38.160 And so if it's true that John Bowlby is
NOTE Confidence: 0.8378843

00:10:38.160 --> 00:10:40.367 considered the father of attachment theory,
NOTE Confidence: 0.8378843

00:10:40.370 --> 00:10:43.826 then I think it's only fair to consider Harry
NOTE Confidence: 0.8378843

00:10:43.826 --> 00:10:46.718 Harlow the father of attachment science.
NOTE Confidence: 0.8378843

00:10:46.720 --> 00:10:48.271 And Harlow intern.

NOTE Confidence: 0.8378843

00:10:48.271 --> 00:10:50.339 This relationship was bidirectional

NOTE Confidence: 0.8378843

00:10:50.339 --> 00:10:52.330 Harlow Internews Bowlby's theories

NOTE Confidence: 0.8378843

00:10:52.330 --> 00:10:54.574 and his inspiration for the design

NOTE Confidence: 0.8378843

00:10:54.574 --> 00:10:56.635 of his studies to systematically

NOTE Confidence: 0.8378843

00:10:56.635 --> 00:10:59.233 test the effects of maternal infant

NOTE Confidence: 0.8378843

00:10:59.233 --> 00:11:01.038 separation on infant development.

NOTE Confidence: 0.8378843

00:11:01.038 --> 00:11:03.852 And it's really important to note

NOTE Confidence: 0.8378843

00:11:03.852 --> 00:11:05.680 Bowlby's influence on comparative

NOTE Confidence: 0.8378843

00:11:05.680 --> 00:11:08.564 psychology and animal research as a field,

NOTE Confidence: 0.8378843

00:11:08.570 --> 00:11:12.080 and these are just some of the three major

NOTE Confidence: 0.8378843

00:11:12.080 --> 00:11:15.705 ways that his thinking influenced our work.

NOTE Confidence: 0.8061445

00:11:20.410 --> 00:11:22.804 So Harlow then from that point on

NOTE Confidence: 0.8061445

00:11:22.804 --> 00:11:25.454 made a career of using rhesus monkeys

NOTE Confidence: 0.8061445

00:11:25.454 --> 00:11:28.415 to study things that were not easily

NOTE Confidence: 0.8061445

00:11:28.415 --> 00:11:30.687 researched in humans themselves.

NOTE Confidence: 0.8061445

00:11:30.690 --> 00:11:32.928 He studied the consequences of blocking
NOTE Confidence: 0.8061445

00:11:32.928 --> 00:11:34.950 the formation of different affectional
NOTE Confidence: 0.8061445

00:11:34.950 --> 00:11:36.846 systems via isolation rearing,
NOTE Confidence: 0.8061445

00:11:36.850 --> 00:11:38.494 which I also mentioned,
NOTE Confidence: 0.8061445

00:11:38.494 --> 00:11:40.549 or which I mentioned earlier,
NOTE Confidence: 0.8061445

00:11:40.550 --> 00:11:41.783 affectively reproducing psychopathologies
NOTE Confidence: 0.8061445

00:11:41.783 --> 00:11:44.660 in monkeys that are observable in humans,
NOTE Confidence: 0.8061445

00:11:44.660 --> 00:11:45.956 namely severe depression,
NOTE Confidence: 0.8061445

00:11:45.956 --> 00:11:48.116 and these are the controversial
NOTE Confidence: 0.8061445

00:11:48.116 --> 00:11:49.659 studies that he's most.
NOTE Confidence: 0.8061445

00:11:49.660 --> 00:11:51.907 Well known for, but it's really important.
NOTE Confidence: 0.8061445

00:11:51.910 --> 00:11:54.478 This is not all that he focused on,
NOTE Confidence: 0.8061445

00:11:54.480 --> 00:11:56.706 because later in his career he also
NOTE Confidence: 0.8061445

00:11:56.706 --> 00:11:58.671 studied the importance of other social
NOTE Confidence: 0.8061445

00:11:58.671 --> 00:12:00.897 relationships and so with his second wife,
NOTE Confidence: 0.8061445

00:12:00.900 --> 00:12:01.530 Margaret Harlow,

NOTE Confidence: 0.8061445

00:12:01.530 --> 00:12:03.420 who developed this really cool apparatus

NOTE Confidence: 0.8061445

00:12:03.420 --> 00:12:04.750 called nuclear family housing,

NOTE Confidence: 0.8061445

00:12:04.750 --> 00:12:06.676 in which adults and infants lived

NOTE Confidence: 0.8061445

00:12:06.676 --> 00:12:07.960 in separate apartments here.

NOTE Confidence: 0.8061445

00:12:07.960 --> 00:12:09.565 But the adults were confined

NOTE Confidence: 0.8061445

00:12:09.565 --> 00:12:10.528 to their apartments.

NOTE Confidence: 0.8061445

00:12:10.530 --> 00:12:12.402 Both the mother and the father

NOTE Confidence: 0.8061445

00:12:12.402 --> 00:12:14.318 and the infants could go through

NOTE Confidence: 0.8061445

00:12:14.318 --> 00:12:16.118 this tunnel and play with each

NOTE Confidence: 0.8061445

00:12:16.118 --> 00:12:18.230 other at will throughout the day.

NOTE Confidence: 0.8061445

00:12:18.230 --> 00:12:21.440 But at night they would be locked in at home,

NOTE Confidence: 0.8061445

00:12:21.440 --> 00:12:23.546 in their apartments with each other.

NOTE Confidence: 0.8061445

00:12:23.550 --> 00:12:25.620 And in this way he could

NOTE Confidence: 0.8061445

00:12:25.620 --> 00:12:27.400 systematically study the you know,

NOTE Confidence: 0.8061445

00:12:27.400 --> 00:12:29.948 by manipulating the amount of time that

NOTE Confidence: 0.8061445

00:12:29.948 --> 00:12:31.950 infants had exposure to each other.
NOTE Confidence: 0.8061445

00:12:31.950 --> 00:12:34.687 He could study the impacts of peer
NOTE Confidence: 0.8061445

00:12:34.687 --> 00:12:36.740 relationships on infant development.
NOTE Confidence: 0.8061445

00:12:36.740 --> 00:12:38.966 And so this whole body of work
NOTE Confidence: 0.8061445

00:12:38.966 --> 00:12:40.410 started to definitively establish
NOTE Confidence: 0.8061445

00:12:40.410 --> 00:12:42.560 the overwhelming importance of early
NOTE Confidence: 0.8061445

00:12:42.560 --> 00:12:44.727 social experiences for the development
NOTE Confidence: 0.8061445

00:12:44.727 --> 00:12:47.049 of normal behaviors later in life.
NOTE Confidence: 0.83968014

00:12:49.780 --> 00:12:51.850 And beyond establishing that human
NOTE Confidence: 0.83968014

00:12:51.850 --> 00:12:53.506 psychopathologies can be reproduced
NOTE Confidence: 0.83968014

00:12:53.506 --> 00:12:55.528 in primates and that various
NOTE Confidence: 0.83968014

00:12:55.528 --> 00:12:57.458 social experiences are normal or
NOTE Confidence: 0.83968014

00:12:57.458 --> 00:12:59.208 important for normal development,
NOTE Confidence: 0.83968014

00:12:59.210 --> 00:13:00.440 unbeknownst to many,
NOTE Confidence: 0.83968014

00:13:00.440 --> 00:13:02.490 Harlow also focused on therapeutics,
NOTE Confidence: 0.83968014

00:13:02.490 --> 00:13:04.912 and one such example are the series

NOTE Confidence: 0.83968014

00:13:04.912 --> 00:13:07.728 of studies that he and his colleagues

NOTE Confidence: 0.83968014

00:13:07.728 --> 00:13:09.863 conducted rescuing the social behavior

NOTE Confidence: 0.83968014

00:13:09.863 --> 00:13:12.739 of those isolates I mentioned earlier,

NOTE Confidence: 0.83968014

00:13:12.740 --> 00:13:15.200 and so they achieve this through

NOTE Confidence: 0.83968014

00:13:15.200 --> 00:13:17.699 peer therapy sessions. And So what?

NOTE Confidence: 0.83968014

00:13:17.699 --> 00:13:20.660 You're looking at the top here is.

NOTE Confidence: 0.83968014

00:13:20.660 --> 00:13:22.244 On a social isolate,

NOTE Confidence: 0.83968014

00:13:22.244 --> 00:13:24.620 who until this time had never

NOTE Confidence: 0.83968014

00:13:24.703 --> 00:13:27.158 been exposed to another monkey,

NOTE Confidence: 0.83968014

00:13:27.160 --> 00:13:29.686 very clearly very anxious and withdrawn

NOTE Confidence: 0.83968014

00:13:29.686 --> 00:13:32.350 Hereupon initial contact with another infant.

NOTE Confidence: 0.83968014

00:13:32.350 --> 00:13:34.762 And importantly, the infants were younger

NOTE Confidence: 0.83968014

00:13:34.762 --> 00:13:37.110 than the social isolates themselves,

NOTE Confidence: 0.83968014

00:13:37.110 --> 00:13:39.708 and after several months of a

NOTE Confidence: 0.83968014

00:13:39.708 --> 00:13:41.007 carefully controlled exposure,

NOTE Confidence: 0.83968014

00:13:41.010 --> 00:13:42.618 everyday to these peers,
NOTE Confidence: 0.83968014

00:13:42.618 --> 00:13:45.719 the isolates then went on to develop
NOTE Confidence: 0.83968014

00:13:45.719 --> 00:13:48.147 pretty typical social behaviors.
NOTE Confidence: 0.83968014

00:13:48.150 --> 00:13:50.747 And so this whole body of work,
NOTE Confidence: 0.83968014

00:13:50.750 --> 00:13:52.610 very fondly referred to this
NOTE Confidence: 0.83968014

00:13:52.610 --> 00:13:54.471 research trilogy as Love, created,
NOTE Confidence: 0.83968014

00:13:54.471 --> 00:13:56.326 love, destroyed, and Love regained.
NOTE Confidence: 0.83968014

00:13:56.330 --> 00:13:58.568 And this may sound rather poetic.
NOTE Confidence: 0.83968014

00:13:58.570 --> 00:13:59.683 And in fact,
NOTE Confidence: 0.83968014

00:13:59.683 --> 00:14:01.909 Harlow was really a poetic writer.
NOTE Confidence: 0.83968014

00:14:01.910 --> 00:14:03.770 He actually had a speech
NOTE Confidence: 0.83968014

00:14:03.770 --> 00:14:05.258 impediment as a child,
NOTE Confidence: 0.83968014

00:14:05.260 --> 00:14:07.492 and through many years of teaching
NOTE Confidence: 0.83968014

00:14:07.492 --> 00:14:09.564 as a professor, he overcame that,
NOTE Confidence: 0.83968014

00:14:09.564 --> 00:14:12.269 and he turned into a prolific and poetic
NOTE Confidence: 0.83968014

00:14:12.269 --> 00:14:14.329 science communicator whose sense of

NOTE Confidence: 0.83968014

00:14:14.329 --> 00:14:16.789 humor carried over into his writing,

NOTE Confidence: 0.83968014

00:14:16.790 --> 00:14:18.650 and let me tell you,

NOTE Confidence: 0.83968014

00:14:18.650 --> 00:14:19.248 Harlow was.

NOTE Confidence: 0.83968014

00:14:19.248 --> 00:14:19.547 Hilarious,

NOTE Confidence: 0.83968014

00:14:19.547 --> 00:14:22.179 so I also stumbled upon in the background

NOTE Confidence: 0.83968014

00:14:22.179 --> 00:14:24.079 research for this presentation.

NOTE Confidence: 0.83968014

00:14:24.080 --> 00:14:26.648 This article by Harlow comparing different

NOTE Confidence: 0.83968014

00:14:26.648 --> 00:14:28.895 cognitive abilities of primates in the

NOTE Confidence: 0.83968014

00:14:28.895 --> 00:14:31.430 early zoos that he worked in in in Wisconsin.

NOTE Confidence: 0.83968014

00:14:31.430 --> 00:14:33.530 Now you might notice the publication

NOTE Confidence: 0.83968014

00:14:33.530 --> 00:14:34.230 date 2008,

NOTE Confidence: 0.83968014

00:14:34.230 --> 00:14:36.330 but he died in the 80s,

NOTE Confidence: 0.83968014

00:14:36.330 --> 00:14:38.430 so actually this was published posthumously.

NOTE Confidence: 0.83968014

00:14:38.430 --> 00:14:40.530 It was found in his archives,

NOTE Confidence: 0.83968014

00:14:40.530 --> 00:14:42.630 an article he had never published.

NOTE Confidence: 0.83968014

00:14:42.630 --> 00:14:44.380 An was published in 2008,
NOTE Confidence: 0.83968014

00:14:44.380 --> 00:14:47.179 so I want to give you a little glimpse
NOTE Confidence: 0.83968014

00:14:47.179 --> 00:14:49.686 of how he could both entertain.
NOTE Confidence: 0.83968014

00:14:49.690 --> 00:14:51.170 While educating his audience,
NOTE Confidence: 0.83968014

00:14:51.170 --> 00:14:53.708 the performance of the two chimpanzees was
NOTE Confidence: 0.83968014

00:14:53.708 --> 00:14:55.788 no better than the best of The Monkees.
NOTE Confidence: 0.83968014

00:14:55.790 --> 00:14:56.101 Furthermore,
NOTE Confidence: 0.83968014

00:14:56.101 --> 00:14:57.656 the chimpanzees never seemed to
NOTE Confidence: 0.83968014

00:14:57.656 --> 00:15:00.260 really get down to work and put their
NOTE Confidence: 0.83968014

00:15:00.260 --> 00:15:01.568 hearts into psychological testing.
NOTE Confidence: 0.83968014

00:15:01.570 --> 00:15:03.915 At the time we attributed their good
NOTE Confidence: 0.83968014

00:15:03.915 --> 00:15:05.573 natured distract ability to their
NOTE Confidence: 0.83968014

00:15:05.573 --> 00:15:07.343 age instead of the obvious answer.
NOTE Confidence: 0.83968014

00:15:07.350 --> 00:15:11.040 The fact that they were chimpanzees.
NOTE Confidence: 0.83968014

00:15:11.040 --> 00:15:13.002 And then here's one more which
NOTE Confidence: 0.83968014

00:15:13.002 --> 00:15:15.040 really starts to explain why rhesus

NOTE Confidence: 0.83968014

00:15:15.040 --> 00:15:17.044 monkeys are such a superior model.

NOTE Confidence: 0.83968014

00:15:17.050 --> 00:15:18.970 The rhesus monkey lacks the gay

NOTE Confidence: 0.83968014

00:15:18.970 --> 00:15:20.730 abandoned of the cebus monkey,

NOTE Confidence: 0.83968014

00:15:20.730 --> 00:15:22.395 the elegant grace and composure

NOTE Confidence: 0.83968014

00:15:22.395 --> 00:15:23.394 of the spider,

NOTE Confidence: 0.83968014

00:15:23.400 --> 00:15:25.398 or the buffoonery of the chimpanzee.

NOTE Confidence: 0.83968014

00:15:25.400 --> 00:15:27.374 But beneath the Gray or grim

NOTE Confidence: 0.83968014

00:15:27.374 --> 00:15:29.771 exterior of the recess is a central

NOTE Confidence: 0.83968014

00:15:29.771 --> 00:15:31.451 nervous system waiting to grind

NOTE Confidence: 0.83968014

00:15:31.451 --> 00:15:33.419 out 100 test trials of day.

NOTE Confidence: 0.83968014

00:15:33.420 --> 00:15:34.895 The difference between a cebus

NOTE Confidence: 0.83968014

00:15:34.895 --> 00:15:37.088 monkey and a Reese's is all the

NOTE Confidence: 0.83968014

00:15:37.088 --> 00:15:38.728 difference between a southern Belle

NOTE Confidence: 0.83968014

00:15:38.728 --> 00:15:40.430 Anna New England storekeeper.

NOTE Confidence: 0.83968014

00:15:40.430 --> 00:15:41.696 Our primary interest,

NOTE Confidence: 0.83968014

00:15:41.696 --> 00:15:43.384 concerned learning and intelligence.

NOTE Confidence: 0.83968014

00:15:43.390 --> 00:15:45.665 So those are just some examples of

NOTE Confidence: 0.83968014

00:15:45.665 --> 00:15:47.925 the types of writing that I wish

NOTE Confidence: 0.83968014

00:15:47.925 --> 00:15:50.242 we saw more of today and beyond

NOTE Confidence: 0.83968014

00:15:50.242 --> 00:15:52.768 explaining some of the reasons why

NOTE Confidence: 0.83968014

00:15:52.768 --> 00:15:54.750 rhesus monkeys were great models.

NOTE Confidence: 0.83968014

00:15:54.750 --> 00:15:57.235 We now know even more why there,

NOTE Confidence: 0.85351914

00:15:57.240 --> 00:15:58.980 why there's such reliable

NOTE Confidence: 0.85351914

00:15:58.980 --> 00:16:01.590 models for the study of humans.

NOTE Confidence: 0.85351914

00:16:01.590 --> 00:16:03.345 One reason is that rhesus

NOTE Confidence: 0.85351914

00:16:03.345 --> 00:16:05.100 macaques second only to humans,

NOTE Confidence: 0.85351914

00:16:05.100 --> 00:16:07.206 are second only to humans in

NOTE Confidence: 0.85351914

00:16:07.206 --> 00:16:08.259 their geographic distribution.

NOTE Confidence: 0.85351914

00:16:08.260 --> 00:16:10.330 So there's the second most widely

NOTE Confidence: 0.85351914

00:16:10.330 --> 00:16:12.120 distributed primate in the world,

NOTE Confidence: 0.85351914

00:16:12.120 --> 00:16:13.875 and you could see their

NOTE Confidence: 0.85351914

00:16:13.875 --> 00:16:15.630 distribution here on this map.

NOTE Confidence: 0.82088697

00:16:18.060 --> 00:16:20.220 Rhesus macaque San humans also share

NOTE Confidence: 0.82088697

00:16:20.220 --> 00:16:23.019 a high degree of genetic similarity,

NOTE Confidence: 0.82088697

00:16:23.020 --> 00:16:25.848 about 93%, and in fact there are

NOTE Confidence: 0.82088697

00:16:25.848 --> 00:16:27.960 some polymorphisms that are unique

NOTE Confidence: 0.82088697

00:16:27.960 --> 00:16:30.444 only to humans and rhesus macaques.

NOTE Confidence: 0.8691292

00:16:32.900 --> 00:16:35.490 Another limiting factor in human studies is

NOTE Confidence: 0.8691292

00:16:35.490 --> 00:16:38.760 a very long life span that humans have now.

NOTE Confidence: 0.8691292

00:16:38.760 --> 00:16:41.021 This makes it really difficult to study

NOTE Confidence: 0.8691292

00:16:41.021 --> 00:16:43.273 the same people continuously across the

NOTE Confidence: 0.8691292

00:16:43.273 --> 00:16:45.703 lifespan and to get repeated sampling.

NOTE Confidence: 0.8691292

00:16:45.710 --> 00:16:46.808 Whether it's biological

NOTE Confidence: 0.8691292

00:16:46.808 --> 00:16:47.906 or behavioral measures.

NOTE Confidence: 0.8691292

00:16:47.910 --> 00:16:49.740 But rhesus monkeys develop approximately

NOTE Confidence: 0.8691292

00:16:49.740 --> 00:16:51.570 4 times faster than humans,

NOTE Confidence: 0.8691292

00:16:51.570 --> 00:16:53.826 and so this makes the study of life
NOTE Confidence: 0.8691292

00:16:53.826 --> 00:16:55.377 course an intergenerational studies
NOTE Confidence: 0.8691292

00:16:55.377 --> 00:16:58.149 possible in a shorter time frame.
NOTE Confidence: 0.8691292

00:16:58.150 --> 00:17:00.453 And the monkeys I'm showing you here
NOTE Confidence: 0.8691292

00:17:00.453 --> 00:17:03.020 are some of my absolute favorites.
NOTE Confidence: 0.8691292

00:17:03.020 --> 00:17:04.550 From my work in Maryland,
NOTE Confidence: 0.8691292

00:17:04.550 --> 00:17:06.386 this is my very favorite monkey
NOTE Confidence: 0.8691292

00:17:06.386 --> 00:17:07.901 mom of all time, Xena,
NOTE Confidence: 0.8691292

00:17:07.901 --> 00:17:09.938 with her infant Zinnia in 2008 and
NOTE Confidence: 0.8691292

00:17:09.938 --> 00:17:12.102 just six years later as India had
NOTE Confidence: 0.8691292

00:17:12.102 --> 00:17:14.040 her own first infant named Rufus.
NOTE Confidence: 0.8691292

00:17:14.040 --> 00:17:17.082 And so we were able to study this whole
NOTE Confidence: 0.8691292

00:17:17.082 --> 00:17:20.289 family together within just a few years time.
NOTE Confidence: 0.8691292

00:17:20.290 --> 00:17:22.350 And as mentioned earlier,
NOTE Confidence: 0.8691292

00:17:22.350 --> 00:17:23.380 nonhuman primates,
NOTE Confidence: 0.8691292

00:17:23.380 --> 00:17:24.318 particularly macaques,

NOTE Confidence: 0.8691292

00:17:24.318 --> 00:17:27.132 have complex cognitive abilities as well

NOTE Confidence: 0.8691292

00:17:27.132 --> 00:17:30.587 as very complex social behavioral repertoire,

NOTE Confidence: 0.8691292

00:17:30.590 --> 00:17:31.692 which are,

NOTE Confidence: 0.8691292

00:17:31.692 --> 00:17:36.100 which are made possible due to their nerdy

NOTE Confidence: 0.8691292

00:17:36.205 --> 00:17:40.260 neuro anatomical similarities to humans.

NOTE Confidence: 0.8691292

00:17:40.260 --> 00:17:42.552 So Harlow's legacy was really far

NOTE Confidence: 0.8691292

00:17:42.552 --> 00:17:45.606 reaching and it still is to this day

NOTE Confidence: 0.8691292

00:17:45.606 --> 00:17:47.778 his research has provided an enduring

NOTE Confidence: 0.8691292

00:17:47.848 --> 00:17:50.353 empirical foundation for future work

NOTE Confidence: 0.8691292

00:17:50.353 --> 00:17:52.858 because of his foundational studies

NOTE Confidence: 0.8691292

00:17:52.860 --> 00:17:54.960 into the formation of attachment.

NOTE Confidence: 0.8691292

00:17:54.960 --> 00:17:57.613 We now as scientists can study the

NOTE Confidence: 0.8691292

00:17:57.613 --> 00:17:59.580 interactions of childhood experiences,

NOTE Confidence: 0.8691292

00:17:59.580 --> 00:18:01.110 genetics, biological factors,

NOTE Confidence: 0.8691292

00:18:01.110 --> 00:18:04.680 and epigenetics just to give some examples.

NOTE Confidence: 0.8691292

00:18:04.680 --> 00:18:07.207 We're also able and wanting to study
NOTE Confidence: 0.8691292

00:18:07.207 --> 00:18:09.650 the vulnerability of children or their
NOTE Confidence: 0.8691292

00:18:09.650 --> 00:18:11.805 resilience and recovery in various
NOTE Confidence: 0.8691292

00:18:11.805 --> 00:18:13.998 health outcomes across the lifespan,
NOTE Confidence: 0.8691292

00:18:14.000 --> 00:18:16.025 and scientists today can answer
NOTE Confidence: 0.8691292

00:18:16.025 --> 00:18:18.050 questions that Harlow could not,
NOTE Confidence: 0.8691292

00:18:18.050 --> 00:18:20.070 because since his foundational studies,
NOTE Confidence: 0.8691292

00:18:20.070 --> 00:18:23.136 we've seen an evolution and such
NOTE Confidence: 0.8691292

00:18:23.136 --> 00:18:25.180 techniques like a neuroimaging
NOTE Confidence: 0.8691292

00:18:25.269 --> 00:18:27.300 and epigenetics research.
NOTE Confidence: 0.8691292

00:18:27.300 --> 00:18:31.160 An his legacy of knowledge.
NOTE Confidence: 0.8691292

00:18:31.160 --> 00:18:33.365 Really illustrate is really illustrated
NOTE Confidence: 0.8691292

00:18:33.365 --> 00:18:35.982 here in this graphic that shows
NOTE Confidence: 0.8691292

00:18:35.982 --> 00:18:38.355 just how far reaching his work is.
NOTE Confidence: 0.8691292

00:18:38.360 --> 00:18:40.604 He's had over 10,000 citations of
NOTE Confidence: 0.8691292

00:18:40.604 --> 00:18:43.160 his work and almost 7000 articles,

NOTE Confidence: 0.8691292

00:18:43.160 --> 00:18:45.589 and you can see the disciplines that

NOTE Confidence: 0.8691292

00:18:45.589 --> 00:18:48.441 his work are cited in here and some

NOTE Confidence: 0.8691292

00:18:48.441 --> 00:18:50.833 of the more interesting or obscure

NOTE Confidence: 0.8691292

00:18:50.833 --> 00:18:53.157 ones include educational research,

NOTE Confidence: 0.8691292

00:18:53.160 --> 00:18:54.360 endocrinology, and metabolism,

NOTE Confidence: 0.8691292

00:18:54.360 --> 00:18:56.360 general internal medicine among others,

NOTE Confidence: 0.8691292

00:18:56.360 --> 00:18:58.691 and so this is really a testament

NOTE Confidence: 0.8691292

00:18:58.691 --> 00:19:01.351 to how science continues to build

NOTE Confidence: 0.8691292

00:19:01.351 --> 00:19:02.407 upon understanding.

NOTE Confidence: 0.8691292

00:19:02.410 --> 00:19:03.658 Formed in the past.

NOTE Confidence: 0.7759845

00:19:06.040 --> 00:19:08.170 Now Harry's legacy, of course,

NOTE Confidence: 0.7759845

00:19:08.170 --> 00:19:10.290 was embodied in his trainees.

NOTE Confidence: 0.7759845

00:19:10.290 --> 00:19:13.447 Fun fact, his very first PhD student

NOTE Confidence: 0.7759845

00:19:13.447 --> 00:19:16.032 was Abraham Maslow who developed

NOTE Confidence: 0.7759845

00:19:16.032 --> 00:19:18.328 Maslow's hierarchy of needs.

NOTE Confidence: 0.7759845

00:19:18.330 --> 00:19:19.174 His dissertation,
NOTE Confidence: 0.7759845

00:19:19.174 --> 00:19:21.284 the role of dominance in
NOTE Confidence: 0.7759845

00:19:21.284 --> 00:19:23.250 social behavior of primates.
NOTE Confidence: 0.7759845

00:19:23.250 --> 00:19:25.026 But of course Harlow had other
NOTE Confidence: 0.7759845

00:19:25.026 --> 00:19:26.869 proteges who carried on his legacy,
NOTE Confidence: 0.7759845

00:19:26.870 --> 00:19:28.966 and this legacy is continued not in his
NOTE Confidence: 0.7759845

00:19:28.966 --> 00:19:30.499 original severe deprivation studies,
NOTE Confidence: 0.7759845

00:19:30.500 --> 00:19:32.908 because no one wants to do those anymore,
NOTE Confidence: 0.7759845

00:19:32.910 --> 00:19:35.326 and no one has done them for many,
NOTE Confidence: 0.7759845

00:19:35.330 --> 00:19:36.010 many years.
NOTE Confidence: 0.7759845

00:19:36.010 --> 00:19:38.390 But he trained his students in the
NOTE Confidence: 0.7759845

00:19:38.390 --> 00:19:40.112 rigorous and carefully research
NOTE Confidence: 0.7759845

00:19:40.112 --> 00:19:42.746 techniques to isolate how early life
NOTE Confidence: 0.7759845

00:19:42.746 --> 00:19:44.608 experiences shape lifelong health,
NOTE Confidence: 0.7759845

00:19:44.610 --> 00:19:46.824 and some of these trainees include
NOTE Confidence: 0.7759845

00:19:46.824 --> 00:19:49.086 his postdoc and undergrad Jim Sackett

NOTE Confidence: 0.7759845

00:19:49.086 --> 00:19:50.896 and Jerry Ruppenthal who moved

NOTE Confidence: 0.7759845

00:19:50.896 --> 00:19:53.138 together in 1970 from Wisconsin to

NOTE Confidence: 0.7759845

00:19:53.138 --> 00:19:54.948 launch the infant Primate Research

NOTE Confidence: 0.7759845

00:19:54.948 --> 00:19:57.152 Lab at the University of Washington,

NOTE Confidence: 0.7759845

00:19:57.152 --> 00:20:00.224 which still to this day, is the nation.

NOTE Confidence: 0.7759845

00:20:00.224 --> 00:20:03.080 Only 24 hours staffed infant primate lab.

NOTE Confidence: 0.7759845

00:20:03.080 --> 00:20:05.150 He also trained Melinda Novak,

NOTE Confidence: 0.7759845

00:20:05.150 --> 00:20:07.460 who after graduating a retaining her

NOTE Confidence: 0.7759845

00:20:07.460 --> 00:20:10.389 PhD moved to UMass Amherst where she

NOTE Confidence: 0.7759845

00:20:10.389 --> 00:20:12.579 recently just retired last year.

NOTE Confidence: 0.7759845

00:20:12.580 --> 00:20:15.282 But for the duration of her career

NOTE Confidence: 0.7759845

00:20:15.282 --> 00:20:17.539 ran a small primate lab,

NOTE Confidence: 0.7759845

00:20:17.540 --> 00:20:19.732 looking at primate cognition

NOTE Confidence: 0.7759845

00:20:19.732 --> 00:20:21.924 and psychological well being.

NOTE Confidence: 0.7759845

00:20:21.930 --> 00:20:23.870 And he trained Steve Suming,

NOTE Confidence: 0.7759845

00:20:23.870 --> 00:20:25.810 who Appan leaving Wisconsin started
NOTE Confidence: 0.7759845

00:20:25.810 --> 00:20:27.750 the lab of comparative mythology.
NOTE Confidence: 0.7759845

00:20:27.750 --> 00:20:28.881 Mythology at NIH,
NOTE Confidence: 0.7759845

00:20:28.881 --> 00:20:32.020 which was an operation for about 35 years,
NOTE Confidence: 0.7759845

00:20:32.020 --> 00:20:34.420 and these people are very important
NOTE Confidence: 0.7759845

00:20:34.420 --> 00:20:37.449 because they are the ones who raised me,
NOTE Confidence: 0.7759845

00:20:37.450 --> 00:20:39.930 at least academically and
NOTE Confidence: 0.7759845

00:20:39.930 --> 00:20:41.170 professionally speaking.
NOTE Confidence: 0.7759845

00:20:41.170 --> 00:20:42.124 Andres is right.
NOTE Confidence: 0.7759845

00:20:42.124 --> 00:20:44.747 I just happened to be sitting in an
NOTE Confidence: 0.7759845

00:20:44.747 --> 00:20:47.064 animal behavior class when I was an
NOTE Confidence: 0.7759845

00:20:47.064 --> 00:20:49.220 undergrad in zoology at University,
NOTE Confidence: 0.7759845

00:20:49.220 --> 00:20:49.570 Washington,
NOTE Confidence: 0.7759845

00:20:49.570 --> 00:20:50.970 and the professor mentioned
NOTE Confidence: 0.7759845

00:20:50.970 --> 00:20:52.020 infant primate lab.
NOTE Confidence: 0.7759845

00:20:52.020 --> 00:20:54.470 So to conducted my undergrad research there,

NOTE Confidence: 0.7759845

00:20:54.470 --> 00:20:56.920 I obtained my Masters and PhD in

NOTE Confidence: 0.7759845

00:20:56.920 --> 00:20:58.364 behavioral neuroscience under the

NOTE Confidence: 0.7759845

00:20:58.364 --> 00:21:01.056 guidance of Melinda Novak, and I did it.

NOTE Confidence: 0.7759845

00:21:01.056 --> 00:21:02.726 My second postdoctoral fellowship in

NOTE Confidence: 0.7759845

00:21:02.726 --> 00:21:04.945 Steve Sumes lab and my work broadens

NOTE Confidence: 0.7759845

00:21:04.945 --> 00:21:06.622 the concept of early attachments

NOTE Confidence: 0.7759845

00:21:06.622 --> 00:21:09.016 to focus on multiple early life

NOTE Confidence: 0.7759845

00:21:09.016 --> 00:21:10.570 experiences that shaped lifelong

NOTE Confidence: 0.7759845

00:21:10.570 --> 00:21:11.620 and intergenerational health.

NOTE Confidence: 0.84201616

00:21:13.880 --> 00:21:16.771 So my research goals are to identify

NOTE Confidence: 0.84201616

00:21:16.771 --> 00:21:19.080 causal mechanisms linking variable early,

NOTE Confidence: 0.84201616

00:21:19.080 --> 00:21:21.205 early life experiences to health

NOTE Confidence: 0.84201616

00:21:21.205 --> 00:21:23.330 outcomes later in life and

NOTE Confidence: 0.84201616

00:21:23.405 --> 00:21:25.997 adolescence and all hood and beyond,

NOTE Confidence: 0.84201616

00:21:26.000 --> 00:21:28.170 and these health outcomes, importantly,

NOTE Confidence: 0.84201616

00:21:28.170 --> 00:21:30.330 are both behavioral and physical,
NOTE Confidence: 0.84201616

00:21:30.330 --> 00:21:33.368 and when I say early life experiences,
NOTE Confidence: 0.84201616

00:21:33.370 --> 00:21:35.981 I really mean a wide ranging of
NOTE Confidence: 0.84201616

00:21:35.981 --> 00:21:38.559 swath of early life experiences,
NOTE Confidence: 0.84201616

00:21:38.560 --> 00:21:41.290 from prenatal and post Natal stress to
NOTE Confidence: 0.84201616

00:21:41.290 --> 00:21:43.829 various variations in maternal experience.
NOTE Confidence: 0.84201616

00:21:43.830 --> 00:21:45.130 Two naturally occurring variations
NOTE Confidence: 0.84201616

00:21:45.130 --> 00:21:46.430 and mother's milk composition,
NOTE Confidence: 0.84201616

00:21:46.430 --> 00:21:48.055 as well as the influence
NOTE Confidence: 0.84201616

00:21:48.055 --> 00:21:49.030 of early attachments.
NOTE Confidence: 0.84201616

00:21:49.030 --> 00:21:51.750 And though I would really love to talk
NOTE Confidence: 0.84201616

00:21:51.750 --> 00:21:53.907 about findings on all of these today,
NOTE Confidence: 0.84201616

00:21:53.910 --> 00:21:56.622 I'll just be focusing on the
NOTE Confidence: 0.84201616

00:21:56.622 --> 00:21:58.430 influence of early attachments.
NOTE Confidence: 0.84201616

00:21:58.430 --> 00:22:01.125 So this body of work I've been
NOTE Confidence: 0.84201616

00:22:01.125 --> 00:22:03.100 fortunate to conduct because of

NOTE Confidence: 0.84201616

00:22:03.100 --> 00:22:05.683 my time spent in Steve Sumes lab,

NOTE Confidence: 0.84201616

00:22:05.690 --> 00:22:08.448 which was an operation from 1983 until

NOTE Confidence: 0.84201616

00:22:08.448 --> 00:22:11.373 just a couple of years ago when he

NOTE Confidence: 0.84201616

00:22:11.373 --> 00:22:13.527 retired and this was an intramural

NOTE Confidence: 0.84201616

00:22:13.527 --> 00:22:16.376 research lab at the NCH Dee Ann.

NOTE Confidence: 0.84201616

00:22:16.380 --> 00:22:18.445 Its three major goals were to study

NOTE Confidence: 0.84201616

00:22:18.445 --> 00:22:20.345 the genetic and environmental factors

NOTE Confidence: 0.84201616

00:22:20.345 --> 00:22:22.245 that shape individual developmental

NOTE Confidence: 0.84201616

00:22:22.245 --> 00:22:24.563 trajectories and also to examine

NOTE Confidence: 0.84201616

00:22:24.563 --> 00:22:26.699 both the continuity and the change,

NOTE Confidence: 0.84201616

00:22:26.700 --> 00:22:28.476 that is to say,

NOTE Confidence: 0.84201616

00:22:28.476 --> 00:22:30.696 those stability of individual differences.

NOTE Confidence: 0.84201616

00:22:30.700 --> 00:22:33.070 Cross development and finally of

NOTE Confidence: 0.84201616

00:22:33.070 --> 00:22:35.985 course to identify the degree of

NOTE Confidence: 0.84201616

00:22:35.985 --> 00:22:38.315 generalizability to both wild monkeys

NOTE Confidence: 0.84201616

00:22:38.315 --> 00:22:41.408 and for our purposes here to humans.
NOTE Confidence: 0.84201616

00:22:41.410 --> 00:22:43.321 And we were able to achieve this
NOTE Confidence: 0.84201616

00:22:43.321 --> 00:22:44.955 because we could tightly control
NOTE Confidence: 0.84201616

00:22:44.955 --> 00:22:46.850 the early life experiences that
NOTE Confidence: 0.84201616

00:22:46.850 --> 00:22:48.210 monkeys were exposed to,
NOTE Confidence: 0.84201616

00:22:48.210 --> 00:22:50.578 and I'm going to take a few moments
NOTE Confidence: 0.84201616

00:22:50.578 --> 00:22:53.062 to describe those in details so they
NOTE Confidence: 0.84201616

00:22:53.062 --> 00:22:54.887 have a firm understanding because
NOTE Confidence: 0.84201616

00:22:54.957 --> 00:22:57.285 they matter for the rest of the talk.
NOTE Confidence: 0.84201616

00:22:57.290 --> 00:22:59.490 So for in our lab the rhesus monkeys
NOTE Confidence: 0.84201616

00:22:59.490 --> 00:23:01.229 were randomly assigned to experience
NOTE Confidence: 0.84201616

00:23:01.229 --> 00:23:03.119 one of three rearing conditions.
NOTE Confidence: 0.84201616

00:23:03.120 --> 00:23:06.027 For the first eight to 10 months of life.
NOTE Confidence: 0.84201616

00:23:06.030 --> 00:23:08.515 Now on average we would have approximately
NOTE Confidence: 0.84201616

00:23:08.515 --> 00:23:11.268 40 infants per year born into the colony.
NOTE Confidence: 0.84201616

00:23:11.270 --> 00:23:11.582 Anne,

NOTE Confidence: 0.84201616

00:23:11.582 --> 00:23:13.766 randomly 50% of these would be mother,

NOTE Confidence: 0.84201616

00:23:13.770 --> 00:23:14.084 period.

NOTE Confidence: 0.84201616

00:23:14.084 --> 00:23:15.968 This was our control condition Reardon.

NOTE Confidence: 0.84201616

00:23:15.970 --> 00:23:18.154 Social groups with many other adult females,

NOTE Confidence: 0.84201616

00:23:18.160 --> 00:23:19.720 adult males and other infants.

NOTE Confidence: 0.84201616

00:23:19.720 --> 00:23:22.121 The other 50% would be randomly assigned

NOTE Confidence: 0.84201616

00:23:22.121 --> 00:23:24.394 to experience a nursery ring for the

NOTE Confidence: 0.84201616

00:23:24.394 --> 00:23:26.801 first eight to 10 months of life and

NOTE Confidence: 0.84201616

00:23:26.801 --> 00:23:28.817 so from birth they would either be

NOTE Confidence: 0.84201616

00:23:28.817 --> 00:23:30.680 one of two nursery reared formats.

NOTE Confidence: 0.84201616

00:23:30.680 --> 00:23:32.426 The first is peer rearing and

NOTE Confidence: 0.84201616

00:23:32.426 --> 00:23:34.120 the 2nd is surrogate peering.

NOTE Confidence: 0.84201616

00:23:34.120 --> 00:23:36.206 So after the first month of life

NOTE Confidence: 0.84201616

00:23:36.206 --> 00:23:37.811 where infants could Thermo regulate

NOTE Confidence: 0.84201616

00:23:37.811 --> 00:23:39.749 and self feed in the nursery,

NOTE Confidence: 0.84201616

00:23:39.750 --> 00:23:41.410 they were then either randomly
NOTE Confidence: 0.84201616

00:23:41.410 --> 00:23:43.700 assigned to be period where they were.
NOTE Confidence: 0.84201616

00:23:43.700 --> 00:23:45.620 A house with other peers from
NOTE Confidence: 0.84201616

00:23:45.620 --> 00:23:47.738 three other peers 24 hours a day.
NOTE Confidence: 0.84201616

00:23:47.740 --> 00:23:49.588 Or they were housed in a single
NOTE Confidence: 0.84201616

00:23:49.588 --> 00:23:51.514 cage with a cloth covered surrogate
NOTE Confidence: 0.84201616

00:23:51.514 --> 00:23:53.644 for the majority of the day.
NOTE Confidence: 0.84201616

00:23:53.650 --> 00:23:55.996 But given daily play sessions with
NOTE Confidence: 0.84201616

00:23:55.996 --> 00:23:58.269 other surrogate period animals so they
NOTE Confidence: 0.84201616

00:23:58.269 --> 00:24:00.516 do not have continual exposure to peers.
NOTE Confidence: 0.84201616

00:24:00.520 --> 00:24:04.088 Now the research over the decades has has.
NOTE Confidence: 0.83654696

00:24:06.960 --> 00:24:08.270 Has shown us that period
NOTE Confidence: 0.83654696

00:24:08.270 --> 00:24:10.031 monkeys actually go on to become
NOTE Confidence: 0.83654696

00:24:10.031 --> 00:24:11.996 exceptionally dependent on each other,
NOTE Confidence: 0.83654696

00:24:12.000 --> 00:24:13.908 hyper dependent and the reason for
NOTE Confidence: 0.83654696

00:24:13.908 --> 00:24:16.475 that is because they both act as the

NOTE Confidence: 0.83654696

00:24:16.475 --> 00:24:18.317 secure attachment base for each other

NOTE Confidence: 0.83654696

00:24:18.377 --> 00:24:20.526 and they have a need for attachment

NOTE Confidence: 0.83654696

00:24:20.526 --> 00:24:22.395 so they're unable to break physically

NOTE Confidence: 0.83654696

00:24:22.395 --> 00:24:24.285 to break apart from each other.

NOTE Confidence: 0.83654696

00:24:24.290 --> 00:24:26.126 Starting at very young ages because

NOTE Confidence: 0.83654696

00:24:26.126 --> 00:24:28.735 of the need of others to cling on to

NOTE Confidence: 0.83654696

00:24:28.735 --> 00:24:31.206 them and so they just kind of form

NOTE Confidence: 0.83654696

00:24:31.206 --> 00:24:33.016 these huddling clusters of monkeys

NOTE Confidence: 0.83654696

00:24:33.016 --> 00:24:34.703 in response to stressful situations.

NOTE Confidence: 0.83654696

00:24:34.703 --> 00:24:36.629 Surrogate period monkeys actually turn out.

NOTE Confidence: 0.83654696

00:24:36.630 --> 00:24:38.970 Developmentally to be much closer

NOTE Confidence: 0.83654696

00:24:38.970 --> 00:24:40.842 to Mother period monkeys,

NOTE Confidence: 0.83654696

00:24:40.850 --> 00:24:43.552 but they are still different and so

NOTE Confidence: 0.83654696

00:24:43.552 --> 00:24:45.323 these protocols are substantially

NOTE Confidence: 0.83654696

00:24:45.323 --> 00:24:47.993 improved over harlows methods because

NOTE Confidence: 0.83654696

00:24:47.993 --> 00:24:51.148 in addition to providing early social
NOTE Confidence: 0.83654696

00:24:51.148 --> 00:24:53.508 experience to the nursery monkeys,
NOTE Confidence: 0.83654696

00:24:53.510 --> 00:24:55.066 which parlors did not?
NOTE Confidence: 0.83654696

00:24:55.066 --> 00:24:57.400 These monkeys were involved in numerous
NOTE Confidence: 0.83654696

00:24:57.467 --> 00:25:00.222 experiences that both tested their
NOTE Confidence: 0.83654696

00:25:00.222 --> 00:25:02.426 cognitive development emotional development,
NOTE Confidence: 0.83654696

00:25:02.430 --> 00:25:04.770 so they had everyday multiple
NOTE Confidence: 0.83654696

00:25:04.770 --> 00:25:06.174 variable rich experiences,
NOTE Confidence: 0.83654696

00:25:06.180 --> 00:25:09.284 not only with researchers.
NOTE Confidence: 0.83654696

00:25:09.284 --> 00:25:10.836 But stimulating?
NOTE Confidence: 0.83654696

00:25:10.840 --> 00:25:13.888 Sort of test sessions that would
NOTE Confidence: 0.83654696

00:25:13.888 --> 00:25:15.920 stimulate their simulate their
NOTE Confidence: 0.83654696

00:25:16.009 --> 00:25:19.339 brains and also had continually
NOTE Confidence: 0.83654696

00:25:19.339 --> 00:25:21.337 rotating environmental enrichment.
NOTE Confidence: 0.83654696

00:25:21.340 --> 00:25:21.672 Now,
NOTE Confidence: 0.83654696

00:25:21.672 --> 00:25:24.660 after the first eight to 10 months of life,

NOTE Confidence: 0.83654696

00:25:24.660 --> 00:25:26.454 these monkeys would then be reared

NOTE Confidence: 0.83654696

00:25:26.454 --> 00:25:28.640 identically in the same housing situation,

NOTE Confidence: 0.83654696

00:25:28.640 --> 00:25:29.555 therefore mimic well.

NOTE Confidence: 0.83654696

00:25:29.555 --> 00:25:31.385 We would form them into a

NOTE Confidence: 0.83654696

00:25:31.385 --> 00:25:32.959 mixed social rearing group.

NOTE Confidence: 0.83654696

00:25:32.960 --> 00:25:34.952 Now this was a really stressful

NOTE Confidence: 0.83654696

00:25:34.952 --> 00:25:35.616 event actually,

NOTE Confidence: 0.83654696

00:25:35.620 --> 00:25:37.240 because what would happen

NOTE Confidence: 0.83654696

00:25:37.240 --> 00:25:38.860 is literally one day.

NOTE Confidence: 0.83654696

00:25:38.860 --> 00:25:39.661 All the monkeys,

NOTE Confidence: 0.83654696

00:25:39.661 --> 00:25:40.729 mother period and nurtured

NOTE Confidence: 0.83654696

00:25:40.729 --> 00:25:42.260 would be up and relocated,

NOTE Confidence: 0.83654696

00:25:42.260 --> 00:25:44.516 put into a new room and said OK,

NOTE Confidence: 0.83654696

00:25:44.520 --> 00:25:46.864 Now you have to get along an imagine

NOTE Confidence: 0.83654696

00:25:46.864 --> 00:25:48.883 that you're suddenly one day taken to

NOTE Confidence: 0.83654696

00:25:48.883 --> 00:25:51.127 a new home with new people and you
NOTE Confidence: 0.83654696

00:25:51.127 --> 00:25:54.680 just have to learn how to get along.
NOTE Confidence: 0.83654696

00:25:54.680 --> 00:25:56.612 So although this was a majorly
NOTE Confidence: 0.83654696

00:25:56.612 --> 00:25:57.256 stressful experience,
NOTE Confidence: 0.83654696

00:25:57.260 --> 00:25:58.870 it was not permanently stressful.
NOTE Confidence: 0.83654696

00:25:58.870 --> 00:26:01.117 They did adapt as you'll see later,
NOTE Confidence: 0.83654696

00:26:01.120 --> 00:26:02.975 but it's important to note that they
NOTE Confidence: 0.83654696

00:26:02.975 --> 00:26:04.988 live in this mixture ING environment
NOTE Confidence: 0.83654696

00:26:04.988 --> 00:26:06.918 with identical care in treatment,
NOTE Confidence: 0.83654696

00:26:06.920 --> 00:26:09.167 essentially for the rest of their lives.
NOTE Confidence: 0.83654696

00:26:09.170 --> 00:26:09.491 Now,
NOTE Confidence: 0.83654696

00:26:09.491 --> 00:26:11.096 at three years of age,
NOTE Confidence: 0.83654696

00:26:11.100 --> 00:26:13.636 and we separated them by *** to avoid
NOTE Confidence: 0.83654696

00:26:13.636 --> 00:26:14.848 unintended pregnancies and females
NOTE Confidence: 0.83654696

00:26:14.848 --> 00:26:16.900 went back into the breeding colony,
NOTE Confidence: 0.83654696

00:26:16.900 --> 00:26:18.505 but they still maintain their

NOTE Confidence: 0.83654696
00:26:18.505 --> 00:26:19.468 mixed rearing groups,
NOTE Confidence: 0.83654696
00:26:19.470 --> 00:26:21.612 and so any differences that we
NOTE Confidence: 0.83654696
00:26:21.612 --> 00:26:24.079 observed after the first eight to 10
NOTE Confidence: 0.83654696
00:26:24.079 --> 00:26:26.023 months of life can be attributed.
NOTE Confidence: 0.83654696
00:26:26.030 --> 00:26:27.414 To the differential early
NOTE Confidence: 0.83654696
00:26:27.414 --> 00:26:29.144 rearing experiences in the first
NOTE Confidence: 0.83654696
00:26:29.144 --> 00:26:30.680 eight to 10 months of life.
NOTE Confidence: 0.8536526
00:26:33.700 --> 00:26:35.680 Now over the last several years,
NOTE Confidence: 0.8536526
00:26:35.680 --> 00:26:37.990 we've been able to look at how
NOTE Confidence: 0.8536526
00:26:37.990 --> 00:26:39.310 these different, tightly controlled,
NOTE Confidence: 0.8536526
00:26:39.310 --> 00:26:40.300 early life experiences
NOTE Confidence: 0.8536526
00:26:40.300 --> 00:26:41.290 influence multiple outcomes.
NOTE Confidence: 0.8536526
00:26:41.290 --> 00:26:43.341 In one of our primary outcomes of
NOTE Confidence: 0.8536526
00:26:43.341 --> 00:26:44.920 interest is cognitive development,
NOTE Confidence: 0.8536526
00:26:44.920 --> 00:26:46.906 which we assess in monkeys from
NOTE Confidence: 0.8536526

00:26:46.906 --> 00:26:49.209 about four to eight months of age,
NOTE Confidence: 0.8536526

00:26:49.210 --> 00:26:50.805 which is equivalent to approximately
NOTE Confidence: 0.8536526

00:26:50.805 --> 00:26:52.840 one to three years in humans,
NOTE Confidence: 0.8536526

00:26:52.840 --> 00:26:54.682 and there's a direct through line
NOTE Confidence: 0.8536526

00:26:54.682 --> 00:26:56.673 from Harlow's very early work on
NOTE Confidence: 0.8536526

00:26:56.673 --> 00:26:58.448 cognitive capabilities to our research.
NOTE Confidence: 0.8536526

00:26:58.450 --> 00:27:00.430 If you remember when I mentioned
NOTE Confidence: 0.8536526

00:27:00.430 --> 00:27:01.750 earlier the W GTA,
NOTE Confidence: 0.8536526

00:27:01.750 --> 00:27:04.156 there was constant general testing apparatus.
NOTE Confidence: 0.8536526

00:27:04.160 --> 00:27:06.152 We use that in the early work and
NOTE Confidence: 0.8536526

00:27:06.152 --> 00:27:07.934 along with standardized battery of
NOTE Confidence: 0.8536526

00:27:07.934 --> 00:27:09.974 cognitive assessments that were developed
NOTE Confidence: 0.8536526

00:27:09.974 --> 00:27:12.319 at the primate lab at Washington,
NOTE Confidence: 0.8536526

00:27:12.320 --> 00:27:14.384 where I was an undergrad in
NOTE Confidence: 0.8536526

00:27:14.384 --> 00:27:16.060 which I was trained on.
NOTE Confidence: 0.8536526

00:27:16.060 --> 00:27:17.908 But up until very recently it was

NOTE Confidence: 0.8536526

00:27:17.908 --> 00:27:19.515 only possible to administer these

NOTE Confidence: 0.8536526

00:27:19.515 --> 00:27:21.035 cognitive assessments to nursery

NOTE Confidence: 0.8536526

00:27:21.035 --> 00:27:23.341 monkeys because of the compounds that

NOTE Confidence: 0.8536526

00:27:23.341 --> 00:27:25.161 would come along with separating

NOTE Confidence: 0.8536526

00:27:25.161 --> 00:27:27.280 temporarily an infant from its mother

NOTE Confidence: 0.8536526

00:27:27.280 --> 00:27:29.320 to give a cognitive tasks well.

NOTE Confidence: 0.8536526

00:27:29.320 --> 00:27:30.560 A few years ago,

NOTE Confidence: 0.8536526

00:27:30.560 --> 00:27:32.833 we decided to tackle this and we

NOTE Confidence: 0.8536526

00:27:32.833 --> 00:27:34.891 devised a method a really simple

NOTE Confidence: 0.8536526

00:27:34.891 --> 00:27:37.480 apparatus to be able to test socially.

NOTE Confidence: 0.8536526

00:27:37.480 --> 00:27:38.832 House Mother period infants.

NOTE Confidence: 0.8536526

00:27:38.832 --> 00:27:40.184 Here on the left,

NOTE Confidence: 0.8536526

00:27:40.190 --> 00:27:41.930 in their home environments and to

NOTE Confidence: 0.8536526

00:27:41.930 --> 00:27:43.464 compare them directly with nursery

NOTE Confidence: 0.8536526

00:27:43.464 --> 00:27:45.704 reared in infants in their home environments.

NOTE Confidence: 0.8536526

00:27:45.710 --> 00:27:47.719 So we had no need for separating
NOTE Confidence: 0.8536526

00:27:47.719 --> 00:27:49.090 infants from their mothers.
NOTE Confidence: 0.8536526

00:27:49.090 --> 00:27:51.112 We got no distress responses and
NOTE Confidence: 0.8536526

00:27:51.112 --> 00:27:53.314 we weren't moving them to a novel
NOTE Confidence: 0.8536526

00:27:53.314 --> 00:27:54.619 room to do the testing.
NOTE Confidence: 0.8536526

00:27:54.620 --> 00:27:57.490 As you saw in this last picture.
NOTE Confidence: 0.8536526

00:27:57.490 --> 00:27:59.282 And I'm going to show a video of
NOTE Confidence: 0.8536526

00:27:59.282 --> 00:28:01.263 what this simple yet I I feel
NOTE Confidence: 0.8536526

00:28:01.263 --> 00:28:02.447 elegant apparatus looked like.
NOTE Confidence: 0.8536526

00:28:02.450 --> 00:28:04.088 So it was a cage within the
NOTE Confidence: 0.8536526

00:28:04.088 --> 00:28:05.579 large floor to ceiling cage,
NOTE Confidence: 0.8536526

00:28:05.580 --> 00:28:07.295 and this cage had a tiny little
NOTE Confidence: 0.8536526

00:28:07.295 --> 00:28:09.085 tunnel that only the infant was small
NOTE Confidence: 0.8536526

00:28:09.085 --> 00:28:11.203 enough to fit through so mom could not
NOTE Confidence: 0.8536526

00:28:11.203 --> 00:28:12.889 prohibit her infant from going in.
NOTE Confidence: 0.8536526

00:28:12.890 --> 00:28:14.456 And I'm here to tell you.

NOTE Confidence: 0.8536526

00:28:14.460 --> 00:28:16.280 As you can see from the video,

NOTE Confidence: 0.8536526

00:28:16.280 --> 00:28:17.690 once the babies learned that they

NOTE Confidence: 0.8536526

00:28:17.690 --> 00:28:19.274 could go in and access streets

NOTE Confidence: 0.8536526

00:28:19.274 --> 00:28:20.458 that mom couldn't get,

NOTE Confidence: 0.8536526

00:28:20.460 --> 00:28:22.287 they were they were all about it.

NOTE Confidence: 0.8536526

00:28:22.290 --> 00:28:24.090 And so you can see this one waiting

NOTE Confidence: 0.8536526

00:28:24.090 --> 00:28:25.995 and as soon as the occluder concern

NOTE Confidence: 0.8536526

00:28:25.995 --> 00:28:27.770 comes in and grabs that treat.

NOTE Confidence: 0.83347994

00:28:32.060 --> 00:28:33.957 So here are some of the tasks

NOTE Confidence: 0.83347994

00:28:33.957 --> 00:28:35.619 that we gave her infants.

NOTE Confidence: 0.83347994

00:28:35.620 --> 00:28:37.580 We gave them a simple training tasks

NOTE Confidence: 0.83347994

00:28:37.580 --> 00:28:39.415 such as simple training tasks that

NOTE Confidence: 0.83347994

00:28:39.415 --> 00:28:41.606 simply where they learn to push aside

NOTE Confidence: 0.83347994

00:28:41.662 --> 00:28:43.636 an object to retrieve a food reward.

NOTE Confidence: 0.83347994

00:28:43.640 --> 00:28:44.828 We followed that with

NOTE Confidence: 0.83347994

00:28:44.828 --> 00:28:45.719 the discrimination task,
NOTE Confidence: 0.83347994

00:28:45.720 --> 00:28:47.666 which was a measure of their ability
NOTE Confidence: 0.83347994

00:28:47.666 --> 00:28:49.578 to associate an object with reward,
NOTE Confidence: 0.83347994

00:28:49.580 --> 00:28:51.589 and so the object that was rewarded
NOTE Confidence: 0.83347994

00:28:51.589 --> 00:28:54.234 would either be a black block or a white
NOTE Confidence: 0.83347994

00:28:54.234 --> 00:28:56.119 block randomly assigned to each infant,
NOTE Confidence: 0.83347994

00:28:56.120 --> 00:28:57.380 and the presentation of
NOTE Confidence: 0.83347994

00:28:57.380 --> 00:28:58.640 those blocks would be.
NOTE Confidence: 0.83347994

00:28:58.640 --> 00:29:00.316 Randomly switched side to
NOTE Confidence: 0.83347994

00:29:00.316 --> 00:29:02.830 side across 25 trials per day.
NOTE Confidence: 0.83347994

00:29:02.830 --> 00:29:04.310 Once they pass that test,
NOTE Confidence: 0.83347994

00:29:04.310 --> 00:29:06.144 we gave them a reversal task to
NOTE Confidence: 0.83347994

00:29:06.144 --> 00:29:07.550 measure their cognitive flexibility.
NOTE Confidence: 0.83347994

00:29:07.550 --> 00:29:09.320 So if Black was previously rewarded,
NOTE Confidence: 0.83347994

00:29:09.320 --> 00:29:11.000 we then rewarded the white block
NOTE Confidence: 0.83347994

00:29:11.000 --> 00:29:13.394 and look to see how long it took

NOTE Confidence: 0.83347994

00:29:13.394 --> 00:29:15.212 them to learn this new Association,

NOTE Confidence: 0.83347994

00:29:15.220 --> 00:29:17.474 and then finally they don't have time

NOTE Confidence: 0.83347994

00:29:17.474 --> 00:29:20.112 to go into the details that video you

NOTE Confidence: 0.83347994

00:29:20.112 --> 00:29:23.023 saw in the last slide was really a

NOTE Confidence: 0.83347994

00:29:23.023 --> 00:29:25.073 task to measure infants impulsivity.

NOTE Confidence: 0.83347994

00:29:25.080 --> 00:29:27.696 And so, in our study of Mother P.

NOTE Confidence: 0.83347994

00:29:27.700 --> 00:29:28.846 Reardon nursery monkeys,

NOTE Confidence: 0.83347994

00:29:28.846 --> 00:29:30.756 we found no global cognitive

NOTE Confidence: 0.83347994

00:29:30.756 --> 00:29:32.382 differences when we looked at

NOTE Confidence: 0.83347994

00:29:32.382 --> 00:29:34.251 cognition in the first year of life,

NOTE Confidence: 0.83347994

00:29:34.260 --> 00:29:36.556 and in fact on 19 different measures,

NOTE Confidence: 0.83347994

00:29:36.560 --> 00:29:37.868 we actually found significant

NOTE Confidence: 0.83347994

00:29:37.868 --> 00:29:40.170 ring effects only for two of them,

NOTE Confidence: 0.83347994

00:29:40.170 --> 00:29:42.466 and one of them actually was on

NOTE Confidence: 0.83347994

00:29:42.466 --> 00:29:43.450 this training task,

NOTE Confidence: 0.83347994

00:29:43.450 --> 00:29:46.498 which does not really.

NOTE Confidence: 0.83347994

00:29:46.500 --> 00:29:48.044 Impact the cognitive development

NOTE Confidence: 0.83347994

00:29:48.044 --> 00:29:50.360 or what we know about cognitive

NOTE Confidence: 0.83347994

00:29:50.430 --> 00:29:51.818 development as a whole.

NOTE Confidence: 0.83347994

00:29:51.820 --> 00:29:54.292 And so this is just one example of

NOTE Confidence: 0.83347994

00:29:54.292 --> 00:29:56.817 data showing the performance on the

NOTE Confidence: 0.83347994

00:29:56.817 --> 00:29:58.657 discrimination and reversal test.

NOTE Confidence: 0.83347994

00:29:58.660 --> 00:30:00.208 Those black white tan.

NOTE Confidence: 0.83347994

00:30:00.208 --> 00:30:01.756 Now in this figure,

NOTE Confidence: 0.83347994

00:30:01.760 --> 00:30:03.824 Mother Pier and monkeys are always

NOTE Confidence: 0.83347994

00:30:03.824 --> 00:30:06.309 presented on the left of the blue line.

NOTE Confidence: 0.83347994

00:30:06.310 --> 00:30:07.630 Here nursery rhyme monkeys,

NOTE Confidence: 0.83347994

00:30:07.630 --> 00:30:09.610 which is both period answer again

NOTE Confidence: 0.83347994

00:30:09.672 --> 00:30:11.187 because they did not differ.

NOTE Confidence: 0.83347994

00:30:11.190 --> 00:30:12.775 They're always presented on the

NOTE Confidence: 0.83347994

00:30:12.775 --> 00:30:15.291 right side of the blue line and what

NOTE Confidence: 0.83347994

00:30:15.291 --> 00:30:17.307 you're looking at is that there are

NOTE Confidence: 0.83347994

00:30:17.370 --> 00:30:19.960 no rearing differences in monkeys bulk rate.

NOTE Confidence: 0.83347994

00:30:19.960 --> 00:30:22.006 That's their refusal to work and

NOTE Confidence: 0.83347994

00:30:22.006 --> 00:30:24.666 how many days it took them to pass

NOTE Confidence: 0.83347994

00:30:24.666 --> 00:30:27.202 the test and how long they took per

NOTE Confidence: 0.83347994

00:30:27.202 --> 00:30:29.393 trial to conduct the tasks or in

NOTE Confidence: 0.83347994

00:30:29.393 --> 00:30:32.018 the percentage of trials correct.

NOTE Confidence: 0.83347994

00:30:32.020 --> 00:30:34.015 And we checked this lack of differences

NOTE Confidence: 0.83347994

00:30:34.015 --> 00:30:36.453 up to the fact that all infants

NOTE Confidence: 0.83347994

00:30:36.453 --> 00:30:38.348 were very carefully acclimatized to

NOTE Confidence: 0.83347994

00:30:38.348 --> 00:30:40.767 testing procedures and to the researchers,

NOTE Confidence: 0.83347994

00:30:40.770 --> 00:30:42.520 and especially that they were

NOTE Confidence: 0.83347994

00:30:42.520 --> 00:30:44.270 comfortable in their home environments.

NOTE Confidence: 0.83347994

00:30:44.270 --> 00:30:44.932 And importantly,

NOTE Confidence: 0.83347994

00:30:44.932 --> 00:30:46.587 we didn't test cognitive capacities

NOTE Confidence: 0.83347994

00:30:46.587 --> 00:30:48.120 under mildly stressful situations,
NOTE Confidence: 0.83347994

00:30:48.120 --> 00:30:50.304 but obviously we might expect that we
NOTE Confidence: 0.83347994

00:30:50.304 --> 00:30:52.320 would see rearing differences there,
NOTE Confidence: 0.83347994

00:30:52.320 --> 00:30:54.784 and we also have not yet been able
NOTE Confidence: 0.83347994

00:30:54.784 --> 00:30:56.948 to look for differences in learning
NOTE Confidence: 0.83347994

00:30:56.948 --> 00:30:59.670 day by day or trial by trial.
NOTE Confidence: 0.83347994

00:30:59.670 --> 00:31:01.896 This is just a gross overview
NOTE Confidence: 0.83347994

00:31:01.896 --> 00:31:03.009 of cognitive development.
NOTE Confidence: 0.83347994

00:31:03.010 --> 00:31:05.248 But looking in that finer detail
NOTE Confidence: 0.83347994

00:31:05.248 --> 00:31:07.699 is something I hope to do when
NOTE Confidence: 0.83347994

00:31:07.699 --> 00:31:09.469 I have a little more time.
NOTE Confidence: 0.83347994

00:31:09.470 --> 00:31:11.155 So with techniques that have
NOTE Confidence: 0.83347994

00:31:11.155 --> 00:31:12.503 emerged in recent years,
NOTE Confidence: 0.83347994

00:31:12.510 --> 00:31:14.694 we've also been able to start probing
NOTE Confidence: 0.83347994

00:31:14.694 --> 00:31:16.770 how early life experiences get under
NOTE Confidence: 0.83347994

00:31:16.770 --> 00:31:18.930 the skin to affect later health,

NOTE Confidence: 0.83347994

00:31:18.930 --> 00:31:20.688 and one of the ways we've

NOTE Confidence: 0.83347994

00:31:20.688 --> 00:31:21.860 looked under the skin

NOTE Confidence: 0.85018224

00:31:21.922 --> 00:31:23.938 is by developing an assay to

NOTE Confidence: 0.85018224

00:31:23.938 --> 00:31:25.745 measure chronic stress by measuring

NOTE Confidence: 0.85018224

00:31:25.745 --> 00:31:27.715 the hormone cortisol in her.

NOTE Confidence: 0.85018224

00:31:27.720 --> 00:31:29.800 Now, cortisol travels through the

NOTE Confidence: 0.85018224

00:31:29.800 --> 00:31:31.880 bloodstream and is deposited into

NOTE Confidence: 0.85018224

00:31:31.950 --> 00:31:33.595 the hair shaft and accumulates

NOTE Confidence: 0.85018224

00:31:33.595 --> 00:31:36.074 over time so that when you take a

NOTE Confidence: 0.85018224

00:31:36.074 --> 00:31:38.228 sample here at the base of the skin,

NOTE Confidence: 0.85018224

00:31:38.228 --> 00:31:40.436 the base close to the skin.

NOTE Confidence: 0.85018224

00:31:40.440 --> 00:31:43.158 Surface, I mean the amount of

NOTE Confidence: 0.85018224

00:31:43.158 --> 00:31:46.274 cortisol that you get is an

NOTE Confidence: 0.85018224

00:31:46.274 --> 00:31:48.086 aggregate representation of.

NOTE Confidence: 0.85018224

00:31:48.090 --> 00:31:49.824 Hypothalamic pituitary adrenal

NOTE Confidence: 0.85018224

00:31:49.824 --> 00:31:52.714 axis activity is basically a
NOTE Confidence: 0.85018224

00:31:52.714 --> 00:31:55.568 phenotypic view of cortisol activity.
NOTE Confidence: 0.85018224

00:31:55.570 --> 00:31:57.622 And to measure cortisol we simply
NOTE Confidence: 0.85018224

00:31:57.622 --> 00:32:00.140 shave patches of hair from the backs
NOTE Confidence: 0.85018224

00:32:00.140 --> 00:32:02.300 of monkeys neck at routine intervals.
NOTE Confidence: 0.85018224

00:32:02.300 --> 00:32:04.065 And since this procedure was
NOTE Confidence: 0.85018224

00:32:04.065 --> 00:32:05.124 developed in monkeys,
NOTE Confidence: 0.85018224

00:32:05.130 --> 00:32:07.954 it's since been adapted for use in humans.
NOTE Confidence: 0.85018224

00:32:07.960 --> 00:32:10.438 Where no, we don't shave large patches,
NOTE Confidence: 0.85018224

00:32:10.440 --> 00:32:13.058 but we get very small samples with
NOTE Confidence: 0.85018224

00:32:13.058 --> 00:32:15.337 scissors and process the samples
NOTE Confidence: 0.85018224

00:32:15.337 --> 00:32:16.969 for cortisol concentrations.
NOTE Confidence: 0.85018224

00:32:16.970 --> 00:32:19.308 Now, if you were in our study
NOTE Confidence: 0.85018224

00:32:19.308 --> 00:32:20.900 of differently reared monkeys,
NOTE Confidence: 0.85018224

00:32:20.900 --> 00:32:22.850 we looked at her cortisol
NOTE Confidence: 0.85018224

00:32:22.850 --> 00:32:24.020 concentrations across development

NOTE Confidence: 0.85018224

00:32:24.020 --> 00:32:26.247 from birth through two years of age.

NOTE Confidence: 0.85018224

00:32:26.250 --> 00:32:27.725 Now remember any differences we

NOTE Confidence: 0.85018224

00:32:27.725 --> 00:32:30.390 see after 8 to 10 months should be

NOTE Confidence: 0.85018224

00:32:30.390 --> 00:32:32.634 attributable to the first months of

NOTE Confidence: 0.85018224

00:32:32.634 --> 00:32:34.458 different early life experiences,

NOTE Confidence: 0.85018224

00:32:34.460 --> 00:32:36.836 and this figure is showing you

NOTE Confidence: 0.85018224

00:32:36.836 --> 00:32:38.420 her cortisol concentrations for

NOTE Confidence: 0.85018224

00:32:38.483 --> 00:32:40.079 all three rearing groups.

NOTE Confidence: 0.85018224

00:32:40.080 --> 00:32:42.270 The blue line indicates that stressful

NOTE Confidence: 0.85018224

00:32:42.270 --> 00:32:44.277 relocation that I mentioned and 1st

NOTE Confidence: 0.85018224

00:32:44.277 --> 00:32:46.221 I want to draw your attention to the

NOTE Confidence: 0.85018224

00:32:46.284 --> 00:32:48.312 fact that prior to relocation those

NOTE Confidence: 0.85018224

00:32:48.312 --> 00:32:50.167 peer weird monkeys, the black squares.

NOTE Confidence: 0.85018224

00:32:50.167 --> 00:32:52.840 The ones I said to develop hyper attachments.

NOTE Confidence: 0.85018224

00:32:52.840 --> 00:32:54.545 Those monkeys had higher her

NOTE Confidence: 0.85018224

00:32:54.545 --> 00:32:55.909 cortisol concentrations than either
NOTE Confidence: 0.85018224

00:32:55.909 --> 00:32:57.940 of the other two groups of monkeys,
NOTE Confidence: 0.85018224

00:32:57.940 --> 00:32:59.455 just at baseline.
NOTE Confidence: 0.85018224

00:32:59.455 --> 00:33:01.980 And these her cortisol concentrations
NOTE Confidence: 0.85018224

00:33:01.980 --> 00:33:04.373 remained elevated for up to a
NOTE Confidence: 0.85018224

00:33:04.373 --> 00:33:05.685 year after the relocation.
NOTE Confidence: 0.85018224

00:33:05.690 --> 00:33:07.555 Surrogate monkeys showed a massive
NOTE Confidence: 0.85018224

00:33:07.555 --> 00:33:10.110 increase in her cortisol after relocation,
NOTE Confidence: 0.85018224

00:33:10.110 --> 00:33:11.718 which also stayed elevated.
NOTE Confidence: 0.85018224

00:33:11.718 --> 00:33:14.991 But importantly by two years of age after
NOTE Confidence: 0.85018224

00:33:14.991 --> 00:33:17.749 they had had sufficient time to acclimate,
NOTE Confidence: 0.85018224

00:33:17.750 --> 00:33:20.286 the monkeys were indistinguishable
NOTE Confidence: 0.85018224

00:33:20.286 --> 00:33:22.188 from one another.
NOTE Confidence: 0.85018224

00:33:22.190 --> 00:33:24.500 Now when we looked at these
NOTE Confidence: 0.85018224

00:33:24.500 --> 00:33:26.040 same monkeys anxious behavior,
NOTE Confidence: 0.85018224

00:33:26.040 --> 00:33:27.970 we found somewhat similar patterns.

NOTE Confidence: 0.85018224

00:33:27.970 --> 00:33:29.968 The monkeys did not develop any

NOTE Confidence: 0.85018224

00:33:29.968 --> 00:33:32.264 anxious or show very much anxious

NOTE Confidence: 0.85018224

00:33:32.264 --> 00:33:34.504 behavior in their home environments.

NOTE Confidence: 0.85018224

00:33:34.510 --> 00:33:35.290 Preload relocation,

NOTE Confidence: 0.85018224

00:33:35.290 --> 00:33:36.850 but understandably all monkeys

NOTE Confidence: 0.85018224

00:33:36.850 --> 00:33:39.518 found this to be a stressful event.

NOTE Confidence: 0.85018224

00:33:39.520 --> 00:33:41.830 An showed massive increases in anxiety,

NOTE Confidence: 0.85018224

00:33:41.830 --> 00:33:44.140 especially if they were nursery reared,

NOTE Confidence: 0.85018224

00:33:44.140 --> 00:33:46.060 but particularly for period monkeys.

NOTE Confidence: 0.85018224

00:33:46.060 --> 00:33:46.512 Again,

NOTE Confidence: 0.85018224

00:33:46.512 --> 00:33:49.224 the squares here those levels of

NOTE Confidence: 0.85018224

00:33:49.224 --> 00:33:51.041 anxious behavior remained elevated

NOTE Confidence: 0.85018224

00:33:51.041 --> 00:33:53.778 for up to one year after relocation.

NOTE Confidence: 0.85018224

00:33:53.780 --> 00:33:55.928 However, by two years of age,

NOTE Confidence: 0.85018224

00:33:55.930 --> 00:33:56.290 again,

NOTE Confidence: 0.85018224

00:33:56.290 --> 00:33:58.450 they were indistinguishable from one another.
NOTE Confidence: 0.85018224

00:33:58.450 --> 00:34:00.270 Now we wanted to know does does
NOTE Confidence: 0.85018224

00:34:00.270 --> 00:34:02.374 her cortisol in infancy before the
NOTE Confidence: 0.85018224

00:34:02.374 --> 00:34:04.058 relocation predict anxious behavior
NOTE Confidence: 0.85018224

00:34:04.058 --> 00:34:05.990 after their stressful relocation?
NOTE Confidence: 0.85018224

00:34:05.990 --> 00:34:07.780 And the answer is yes,
NOTE Confidence: 0.85018224

00:34:07.780 --> 00:34:09.570 we found a significant correlation
NOTE Confidence: 0.85018224

00:34:09.570 --> 00:34:10.644 for all monkeys.
NOTE Confidence: 0.85018224

00:34:10.650 --> 00:34:14.520 But when we broke it down by rearing group.
NOTE Confidence: 0.85018224

00:34:14.520 --> 00:34:16.340 That correlation maybe no surprise,
NOTE Confidence: 0.85018224

00:34:16.340 --> 00:34:18.518 was significant only for purity animals,
NOTE Confidence: 0.85018224

00:34:18.520 --> 00:34:20.340 an this correlation persistent again,
NOTE Confidence: 0.85018224

00:34:20.340 --> 00:34:22.888 for up to one year post relocation.
NOTE Confidence: 0.8373482

00:34:25.610 --> 00:34:27.235 Another important outcome of interest
NOTE Confidence: 0.8373482

00:34:27.235 --> 00:34:28.860 for us is socialrank attainment,
NOTE Confidence: 0.8373482

00:34:28.860 --> 00:34:31.009 which in this study I'm about to

NOTE Confidence: 0.8373482

00:34:31.009 --> 00:34:33.000 present we measured or reassessed in

NOTE Confidence: 0.8373482

00:34:33.000 --> 00:34:35.352 adolescent monkeys age 2 to three years,

NOTE Confidence: 0.8373482

00:34:35.360 --> 00:34:37.394 which is equivalent to about 8

NOTE Confidence: 0.8373482

00:34:37.394 --> 00:34:39.959 to 12 years in human children.

NOTE Confidence: 0.8373482

00:34:39.960 --> 00:34:42.207 Now, rhesus monkeys have a very rigid

NOTE Confidence: 0.8373482

00:34:42.207 --> 00:34:43.740 varying linear dominance hierarchy,

NOTE Confidence: 0.8373482

00:34:43.740 --> 00:34:45.903 which is enforced by often subtle but

NOTE Confidence: 0.8373482

00:34:45.903 --> 00:34:47.869 sometimes not so subtle behaviors.

NOTE Confidence: 0.8373482

00:34:47.870 --> 00:34:50.582 So sometimes even a sideways glance will be

NOTE Confidence: 0.8373482

00:34:50.582 --> 00:34:53.376 enough to tell one monkey who's in charge,

NOTE Confidence: 0.8373482

00:34:53.380 --> 00:34:56.444 by the way, notice in the background who's

NOTE Confidence: 0.8373482

00:34:56.444 --> 00:34:58.801 watching this interaction and learning

NOTE Confidence: 0.8373482

00:34:58.801 --> 00:35:01.326 some really important social cues.

NOTE Confidence: 0.8373482

00:35:01.330 --> 00:35:02.930 Other behaviors that reinforce the

NOTE Confidence: 0.8373482

00:35:02.930 --> 00:35:04.530 dominance hierarchy are threat displays,

NOTE Confidence: 0.8373482

00:35:04.530 --> 00:35:07.274 and then if they get a really escalated
NOTE Confidence: 0.8373482

00:35:07.274 --> 00:35:09.320 monkeys will physically chase and
NOTE Confidence: 0.8373482

00:35:09.320 --> 00:35:10.607 attack each other.
NOTE Confidence: 0.8373482

00:35:10.610 --> 00:35:13.570 Now, the way the hierarchy goes is that
NOTE Confidence: 0.8373482

00:35:13.570 --> 00:35:16.925 monkey A will always win against Monkey B,
NOTE Confidence: 0.8373482

00:35:16.930 --> 00:35:21.097 who never loses to anyone except a monkey a.
NOTE Confidence: 0.8373482

00:35:21.100 --> 00:35:23.380 But monkey be never loses to
NOTE Confidence: 0.8373482

00:35:23.380 --> 00:35:26.057 monkey see and so on and so on.
NOTE Confidence: 0.8373482

00:35:26.060 --> 00:35:28.178 And once hierarchies are formed very,
NOTE Confidence: 0.8373482

00:35:28.180 --> 00:35:29.242 they're rather stable.
NOTE Confidence: 0.8373482

00:35:29.242 --> 00:35:29.950 And so,
NOTE Confidence: 0.8373482

00:35:29.950 --> 00:35:31.720 although there are important differences,
NOTE Confidence: 0.8373482

00:35:31.720 --> 00:35:34.191 rhesus monkey social status is a good
NOTE Confidence: 0.8373482

00:35:34.191 --> 00:35:36.319 proxy of socioeconomic status in humans,
NOTE Confidence: 0.8373482

00:35:36.320 --> 00:35:38.637 because those at the top have greater
NOTE Confidence: 0.8373482

00:35:38.637 --> 00:35:40.918 access to resources like social partners,

NOTE Confidence: 0.8373482

00:35:40.920 --> 00:35:41.982 desirable social partners,

NOTE Confidence: 0.8373482

00:35:41.982 --> 00:35:42.690 better food,

NOTE Confidence: 0.8373482

00:35:42.690 --> 00:35:44.460 or first access to food.

NOTE Confidence: 0.8373482

00:35:44.460 --> 00:35:46.782 The best shelter which for monkeys

NOTE Confidence: 0.8373482

00:35:46.782 --> 00:35:49.420 is a shady spot on a hot day,

NOTE Confidence: 0.8373482

00:35:49.420 --> 00:35:52.024 and both monkeys and humans use their

NOTE Confidence: 0.8373482

00:35:52.024 --> 00:35:54.339 power to access those resources.

NOTE Confidence: 0.8373482

00:35:54.340 --> 00:35:56.860 So in our study of juvenile monkeys,

NOTE Confidence: 0.8373482

00:35:56.860 --> 00:35:58.750 we found that nursery reared

NOTE Confidence: 0.8373482

00:35:58.750 --> 00:36:00.640 juveniles both period and surrogate

NOTE Confidence: 0.8373482

00:36:00.699 --> 00:36:02.323 reared occupied lower social

NOTE Confidence: 0.8373482

00:36:02.323 --> 00:36:04.353 ranks than mother reared monkeys.

NOTE Confidence: 0.8373482

00:36:04.360 --> 00:36:06.880 And this was a finding that held

NOTE Confidence: 0.8373482

00:36:06.880 --> 00:36:09.425 true for adults as well once they

NOTE Confidence: 0.8373482

00:36:09.425 --> 00:36:12.030 were eight to eight years or older.

NOTE Confidence: 0.8373482

00:36:12.030 --> 00:36:14.578 But we had an interesting caveat here.
NOTE Confidence: 0.8373482

00:36:14.580 --> 00:36:17.500 So we looked to see whether her cortisol,
NOTE Confidence: 0.8373482

00:36:17.500 --> 00:36:18.996 the chronic stress measure,
NOTE Confidence: 0.8373482

00:36:18.996 --> 00:36:21.649 could was affiliated with social rank and
NOTE Confidence: 0.8373482

00:36:21.649 --> 00:36:24.064 in adulthood only for Mother Period monkeys,
NOTE Confidence: 0.8373482

00:36:24.070 --> 00:36:26.260 which is the solid black line.
NOTE Confidence: 0.8373482

00:36:26.260 --> 00:36:28.070 Was there significant correlation such
NOTE Confidence: 0.8373482

00:36:28.070 --> 00:36:30.296 that mother period monkeys with higher
NOTE Confidence: 0.8373482

00:36:30.296 --> 00:36:32.468 her cortisol indicative of greater stress,
NOTE Confidence: 0.8373482

00:36:32.470 --> 00:36:34.440 ranked lower on the hierarchy?
NOTE Confidence: 0.8373482

00:36:34.440 --> 00:36:35.984 But this a filler.
NOTE Confidence: 0.8373482

00:36:35.984 --> 00:36:37.914 This relationship was not present
NOTE Confidence: 0.8373482

00:36:37.914 --> 00:36:40.098 for the nursery room monkeys,
NOTE Confidence: 0.8373482

00:36:40.100 --> 00:36:43.610 so we look back in time to that stressful
NOTE Confidence: 0.8373482

00:36:43.610 --> 00:36:45.987 relocation and we found that once
NOTE Confidence: 0.8373482

00:36:45.987 --> 00:36:48.580 again from other peer reared monkeys,

NOTE Confidence: 0.8373482

00:36:48.580 --> 00:36:50.998 only their ability to regulate cortisol,

NOTE Confidence: 0.8373482

00:36:51.000 --> 00:36:53.220 their changes in cortisol across

NOTE Confidence: 0.8373482

00:36:53.220 --> 00:36:54.996 several months following relocation

NOTE Confidence: 0.8373482

00:36:54.996 --> 00:36:56.572 significantly predicted their dominant

NOTE Confidence: 0.8373482

00:36:56.572 --> 00:36:59.071 status only if they were mother appeared,

NOTE Confidence: 0.8373482

00:36:59.080 --> 00:37:02.080 and so this suggests that there

NOTE Confidence: 0.8373482

00:37:02.080 --> 00:37:04.450 is a stress regulation is.

NOTE Confidence: 0.8373482

00:37:04.450 --> 00:37:06.508 Is out of wack in nursery monkeys

NOTE Confidence: 0.8373482

00:37:06.508 --> 00:37:08.319 an that this dysregulation likely

NOTE Confidence: 0.8373482

00:37:08.319 --> 00:37:10.893 begins in adolescence and maybe a

NOTE Confidence: 0.8373482

00:37:10.893 --> 00:37:13.100 predictor of adult social status.

NOTE Confidence: 0.822889

00:37:15.530 --> 00:37:17.624 So recall that I just showed

NOTE Confidence: 0.822889

00:37:17.624 --> 00:37:19.441 you that higher ranking monkeys

NOTE Confidence: 0.822889

00:37:19.441 --> 00:37:21.565 are more likely to be mother,

NOTE Confidence: 0.822889

00:37:21.570 --> 00:37:23.652 period, and this is a particular

NOTE Confidence: 0.822889

00:37:23.652 --> 00:37:25.470 importance for this next study,
NOTE Confidence: 0.822889

00:37:25.470 --> 00:37:27.170 which examined differential DNA metalation
NOTE Confidence: 0.822889

00:37:27.170 --> 00:37:29.665 in the placenta of high middle ranking
NOTE Confidence: 0.822889

00:37:29.665 --> 00:37:31.505 monkeys versus low ranking monkeys.
NOTE Confidence: 0.822889

00:37:31.510 --> 00:37:33.560 And remember the high ranking
NOTE Confidence: 0.822889

00:37:33.560 --> 00:37:36.068 monkey placentas are more likely to
NOTE Confidence: 0.822889

00:37:36.068 --> 00:37:37.998 come from mother period animals.
NOTE Confidence: 0.822889

00:37:38.000 --> 00:37:40.142 And so we studied DNA methylation
NOTE Confidence: 0.822889

00:37:40.142 --> 00:37:42.828 as another way to look under this
NOTE Confidence: 0.822889

00:37:42.828 --> 00:37:44.793 skin because DNA changes the
NOTE Confidence: 0.822889

00:37:44.793 --> 00:37:47.458 activity of a DNA sequence without
NOTE Confidence: 0.822889

00:37:47.458 --> 00:37:49.718 changing its structure or sequence.
NOTE Confidence: 0.822889

00:37:49.720 --> 00:37:50.646 An importantly,
NOTE Confidence: 0.822889

00:37:50.646 --> 00:37:52.498 because Miss Metalation typically
NOTE Confidence: 0.822889

00:37:52.498 --> 00:37:55.499 acts to alter later gene expression.
NOTE Confidence: 0.822889

00:37:55.500 --> 00:37:57.294 And so we found dramatic differences

NOTE Confidence: 0.822889
00:37:57.294 --> 00:37:59.132 in DNA methylation in the placenta
NOTE Confidence: 0.822889
00:37:59.132 --> 00:38:00.896 of monkeys that were high ranking
NOTE Confidence: 0.822889
00:38:00.896 --> 00:38:01.950 versus low ranking,
NOTE Confidence: 0.822889
00:38:01.950 --> 00:38:03.792 and that's what this heat map
NOTE Confidence: 0.822889
00:38:03.792 --> 00:38:05.020 here is showing you.
NOTE Confidence: 0.822889
00:38:05.020 --> 00:38:07.468 All you need to know is the high,
NOTE Confidence: 0.822889
00:38:07.470 --> 00:38:08.439 medium, low rank,
NOTE Confidence: 0.822889
00:38:08.439 --> 00:38:10.377 high medium ranking monkeys are on
NOTE Confidence: 0.822889
00:38:10.377 --> 00:38:12.425 the left side and the low ranking
NOTE Confidence: 0.822889
00:38:12.425 --> 00:38:14.230 monkeys are on the right side.
NOTE Confidence: 0.822889
00:38:14.230 --> 00:38:16.127 An blue is low levels of metalation
NOTE Confidence: 0.822889
00:38:16.127 --> 00:38:18.218 red is high levels of metalation.
NOTE Confidence: 0.822889
00:38:18.220 --> 00:38:20.434 You could see that their patterns
NOTE Confidence: 0.822889
00:38:20.434 --> 00:38:21.910 of methylations are essentially
NOTE Confidence: 0.822889
00:38:21.973 --> 00:38:23.110 opposite each other.
NOTE Confidence: 0.822889

00:38:23.110 --> 00:38:24.162 And further,
NOTE Confidence: 0.822889

00:38:24.162 --> 00:38:26.792 exploration revealed that the dramatic
NOTE Confidence: 0.822889

00:38:26.792 --> 00:38:29.451 differences in Diamet DNA metalation
NOTE Confidence: 0.822889

00:38:29.451 --> 00:38:31.971 were particularly located in networks
NOTE Confidence: 0.822889

00:38:31.971 --> 00:38:34.929 that are critical to cell morphology,
NOTE Confidence: 0.822889

00:38:34.930 --> 00:38:36.986 cell growth and differentiation,
NOTE Confidence: 0.822889

00:38:36.986 --> 00:38:38.528 and cell signaling.
NOTE Confidence: 0.822889

00:38:38.530 --> 00:38:39.558 All vital,
NOTE Confidence: 0.822889

00:38:39.558 --> 00:38:40.586 important, vital,
NOTE Confidence: 0.822889

00:38:40.586 --> 00:38:43.156 and functions for placental Physiology.
NOTE Confidence: 0.822889

00:38:43.160 --> 00:38:45.626 We also found that the upstream
NOTE Confidence: 0.822889

00:38:45.626 --> 00:38:48.687 regulators of these gene networks included
NOTE Confidence: 0.822889

00:38:48.687 --> 00:38:51.375 glucocorticoid receptor target genes,
NOTE Confidence: 0.822889

00:38:51.380 --> 00:38:54.020 which indicates to us that.
NOTE Confidence: 0.822889

00:38:54.020 --> 00:38:56.035 The stress stress response is
NOTE Confidence: 0.822889

00:38:56.035 --> 00:38:57.244 particularly important here,

NOTE Confidence: 0.822889

00:38:57.250 --> 00:38:59.674 and so the broad scope of

NOTE Confidence: 0.822889

00:38:59.674 --> 00:39:00.886 methylation differences here,

NOTE Confidence: 0.822889

00:39:00.890 --> 00:39:03.641 as well as the fact that these

NOTE Confidence: 0.822889

00:39:03.641 --> 00:39:05.330 metalation differences affected tissue.

NOTE Confidence: 0.822889

00:39:05.330 --> 00:39:07.350 That's vital for fetal development,

NOTE Confidence: 0.822889

00:39:07.350 --> 00:39:09.370 really illustrates the profound biological

NOTE Confidence: 0.822889

00:39:09.370 --> 00:39:11.390 effect that socialrank likely achieved,

NOTE Confidence: 0.822889

00:39:11.390 --> 00:39:13.410 partly by early rearing may

NOTE Confidence: 0.822889

00:39:13.410 --> 00:39:15.430 have on the next generation,

NOTE Confidence: 0.822889

00:39:15.430 --> 00:39:17.450 and this is important because

NOTE Confidence: 0.822889

00:39:17.450 --> 00:39:19.470 in translating it to humans,

NOTE Confidence: 0.822889

00:39:19.470 --> 00:39:21.505 these have really important implications

NOTE Confidence: 0.822889

00:39:21.505 --> 00:39:24.010 for our understanding of the impacts

NOTE Confidence: 0.822889

00:39:24.010 --> 00:39:26.025 of social equality or inequality.

NOTE Confidence: 0.822889

00:39:26.030 --> 00:39:29.630 Of the well being and care of pregnant women,

NOTE Confidence: 0.822889

00:39:29.630 --> 00:39:32.030 and it underscores the need for

NOTE Confidence: 0.822889

00:39:32.030 --> 00:39:33.630 appropriate interventions for women,

NOTE Confidence: 0.822889

00:39:33.630 --> 00:39:35.885 particularly those who may be

NOTE Confidence: 0.822889

00:39:35.885 --> 00:39:37.689 disadvantaged and more likely

NOTE Confidence: 0.822889

00:39:37.689 --> 00:39:40.109 to suffer from social stress.

NOTE Confidence: 0.822889

00:39:40.110 --> 00:39:42.231 And so this body of work represented

NOTE Confidence: 0.822889

00:39:42.231 --> 00:39:44.750 one of our first forays into

NOTE Confidence: 0.822889

00:39:44.750 --> 00:39:46.295 the intergenerational effects.

NOTE Confidence: 0.822889

00:39:46.300 --> 00:39:47.888 Of early secure attachments.

NOTE Confidence: 0.822889

00:39:47.888 --> 00:39:50.270 Because the placenta is of fetal

NOTE Confidence: 0.822889

00:39:50.343 --> 00:39:52.576 origin and so therefore we may be

NOTE Confidence: 0.822889

00:39:52.576 --> 00:39:55.035 starting to see here in this study

NOTE Confidence: 0.822889

00:39:55.035 --> 00:39:56.825 the impacts of secure attachments

NOTE Confidence: 0.822889

00:39:56.825 --> 00:39:58.279 on the next generation.

NOTE Confidence: 0.86156857

00:40:02.060 --> 00:40:04.796 So only now has it been possible to

NOTE Confidence: 0.86156857

00:40:04.796 --> 00:40:07.197 extend the findings of Goon Park.

NOTE Confidence: 0.86156857
00:40:07.200 --> 00:40:08.808 Beyond offspring development an
NOTE Confidence: 0.86156857
00:40:08.808 --> 00:40:10.416 into multiple generations and
NOTE Confidence: 0.86156857
00:40:10.416 --> 00:40:12.909 we can do this now because we
NOTE Confidence: 0.86156857
00:40:12.909 --> 00:40:14.534 have transferred the entire NCH,
NOTE Confidence: 0.86156857
00:40:14.540 --> 00:40:16.370 the rhesus monkey data set.
NOTE Confidence: 0.86156857
00:40:16.370 --> 00:40:17.838 Both biological and behavioral
NOTE Confidence: 0.86156857
00:40:17.838 --> 00:40:20.040 to the Yale Child Study Center.
NOTE Confidence: 0.86156857
00:40:20.040 --> 00:40:22.692 So we now hold longitudinal perspective
NOTE Confidence: 0.86156857
00:40:22.692 --> 00:40:24.819 and comprehensive data collected over
NOTE Confidence: 0.86156857
00:40:24.819 --> 00:40:27.131 the course of 25 years or more on
NOTE Confidence: 0.86156857
00:40:27.131 --> 00:40:28.907 multiple generations of monkeys in
NOTE Confidence: 0.86156857
00:40:28.907 --> 00:40:31.504 sufficient numbers to be able to begin.
NOTE Confidence: 0.86156857
00:40:31.504 --> 00:40:33.774 To rigorously test the causal
NOTE Confidence: 0.86156857
00:40:33.774 --> 00:40:35.590 influences of disruptions to
NOTE Confidence: 0.86156857
00:40:35.665 --> 00:40:37.515 early secure attachments and some
NOTE Confidence: 0.86156857

00:40:37.515 --> 00:40:40.000 of the data we hold include.
NOTE Confidence: 0.86156857

00:40:40.000 --> 00:40:42.725 Thousands like 25,000 or more
NOTE Confidence: 0.86156857

00:40:42.725 --> 00:40:44.910 biological samples, blood plasma,
NOTE Confidence: 0.86156857

00:40:44.910 --> 00:40:47.090 Cerebro, spinal fluid saliva,
NOTE Confidence: 0.86156857

00:40:47.090 --> 00:40:48.722 extracted DNA RNA,
NOTE Confidence: 0.86156857

00:40:48.722 --> 00:40:51.986 white blood samples and hair samples,
NOTE Confidence: 0.86156857

00:40:51.990 --> 00:40:53.080 among others.
NOTE Confidence: 0.86156857

00:40:53.080 --> 00:40:55.805 We hold extensive neonatal assessments,
NOTE Confidence: 0.86156857

00:40:55.810 --> 00:40:57.565 measuring neurological development
NOTE Confidence: 0.86156857

00:40:57.565 --> 00:41:01.075 and function across the first month
NOTE Confidence: 0.86156857

00:41:01.075 --> 00:41:04.068 of life on multiple generations.
NOTE Confidence: 0.86156857

00:41:04.070 --> 00:41:05.980 And we have health records,
NOTE Confidence: 0.86156857

00:41:05.980 --> 00:41:07.500 weight and BMI data,
NOTE Confidence: 0.86156857

00:41:07.500 --> 00:41:09.022 pregnancy outcomes, social behavior,
NOTE Confidence: 0.86156857

00:41:09.022 --> 00:41:10.927 rank data and much more.
NOTE Confidence: 0.86808455

00:41:13.970 --> 00:41:16.602 And one of the aspects that makes this

NOTE Confidence: 0.86808455

00:41:16.602 --> 00:41:18.998 archival data set such a goldmine and so

NOTE Confidence: 0.86808455

00:41:18.998 --> 00:41:21.727 unique is that we have data on multiple

NOTE Confidence: 0.86808455

00:41:21.727 --> 00:41:24.043 generations of monkeys that were reared

NOTE Confidence: 0.86808455

00:41:24.050 --> 00:41:27.056 in one of four different sequences.

NOTE Confidence: 0.86808455

00:41:27.060 --> 00:41:29.394 So we help now hold intergenerational

NOTE Confidence: 0.86808455

00:41:29.394 --> 00:41:32.144 data on mother offspring pairs that were

NOTE Confidence: 0.86808455

00:41:32.144 --> 00:41:34.271 either mother, period, mother period.

NOTE Confidence: 0.86808455

00:41:34.271 --> 00:41:36.556 So the mothers themselves were

NOTE Confidence: 0.86808455

00:41:36.556 --> 00:41:39.375 weird with their mothers and their

NOTE Confidence: 0.86808455

00:41:39.375 --> 00:41:41.199 infants were mother reared.

NOTE Confidence: 0.86808455

00:41:41.200 --> 00:41:43.504 Or we have a data on monkeys who

NOTE Confidence: 0.86808455

00:41:43.504 --> 00:41:45.260 were reared by their mothers,

NOTE Confidence: 0.86808455

00:41:45.260 --> 00:41:48.606 but their infants reared in the nursery.

NOTE Confidence: 0.86808455

00:41:48.610 --> 00:41:50.442 We have data on monkeys who were who

NOTE Confidence: 0.86808455

00:41:50.442 --> 00:41:52.388 were the mothers were nursery reared,

NOTE Confidence: 0.86808455

00:41:52.390 --> 00:41:54.010 and their infants were also nursery.
NOTE Confidence: 0.86808455

00:41:54.010 --> 00:41:55.630 Weird and where mothers were nurtured.
NOTE Confidence: 0.86808455

00:41:55.630 --> 00:41:59.008 But they reared their own infants.
NOTE Confidence: 0.86808455

00:41:59.010 --> 00:42:01.970 And so, several years ago we forged a
NOTE Confidence: 0.86808455

00:42:01.970 --> 00:42:03.668 unique collaboration with behavioral
NOTE Confidence: 0.86808455

00:42:03.668 --> 00:42:06.344 economists at the University of Chicago,
NOTE Confidence: 0.86808455

00:42:06.350 --> 00:42:08.798 led by Doctor James Heckman, who,
NOTE Confidence: 0.86808455

00:42:08.798 --> 00:42:11.246 as Andres mentioned at the outset,
NOTE Confidence: 0.86808455

00:42:11.250 --> 00:42:14.506 was the Nobel Laureate in Economics in 2000,
NOTE Confidence: 0.86808455

00:42:14.510 --> 00:42:17.518 and is best known for his birth to
NOTE Confidence: 0.86808455

00:42:17.518 --> 00:42:20.229 five research and policy advocacy now.
NOTE Confidence: 0.86808455

00:42:20.230 --> 00:42:21.030 This collaboration,
NOTE Confidence: 0.86808455

00:42:21.030 --> 00:42:23.030 previously found single generation effects
NOTE Confidence: 0.86808455

00:42:23.030 --> 00:42:25.120 of different early life experiences,
NOTE Confidence: 0.86808455

00:42:25.120 --> 00:42:27.610 so the work found that that
NOTE Confidence: 0.86808455

00:42:27.610 --> 00:42:28.855 monkeys experiencing adverse.

NOTE Confidence: 0.86808455

00:42:28.860 --> 00:42:32.036 Adversity early in life via lack of a

NOTE Confidence: 0.86808455

00:42:32.036 --> 00:42:34.454 secure attachment had adverse health

NOTE Confidence: 0.86808455

00:42:34.454 --> 00:42:37.029 outcomes in adolescence and adulthood.

NOTE Confidence: 0.86808455

00:42:37.030 --> 00:42:39.543 But we're now extending this work with

NOTE Confidence: 0.86808455

00:42:39.543 --> 00:42:41.539 the collaborators of pictured here,

NOTE Confidence: 0.86808455

00:42:41.540 --> 00:42:43.801 to study the causal effects of different

NOTE Confidence: 0.86808455

00:42:43.801 --> 00:42:46.050 early attachments on subsequent generations,

NOTE Confidence: 0.86808455

00:42:46.050 --> 00:42:48.535 and this is the work I'm going

NOTE Confidence: 0.86808455

00:42:48.535 --> 00:42:50.570 to finish out with today.

NOTE Confidence: 0.86808455

00:42:50.570 --> 00:42:52.496 So with funding from the National

NOTE Confidence: 0.86808455

00:42:52.496 --> 00:42:53.780 Science Foundation in this

NOTE Confidence: 0.86808455

00:42:53.841 --> 00:42:55.449 first intergenerational study,

NOTE Confidence: 0.86808455

00:42:55.450 --> 00:42:57.748 we capitalized on the randomization of

NOTE Confidence: 0.86808455

00:42:57.748 --> 00:43:00.036 early life experiences in monkeys to

NOTE Confidence: 0.86808455

00:43:00.036 --> 00:43:02.465 quantify the degree of the impact that

NOTE Confidence: 0.86808455

00:43:02.465 --> 00:43:04.849 maternal presence has on offspring health.
NOTE Confidence: 0.86808455

00:43:04.850 --> 00:43:07.208 And we published these findings recently.
NOTE Confidence: 0.86808455

00:43:07.210 --> 00:43:09.513 In a working paper at the National
NOTE Confidence: 0.86808455

00:43:09.513 --> 00:43:11.130 Bureau of Economic Research,
NOTE Confidence: 0.86808455

00:43:11.130 --> 00:43:13.300 and we address a major limitation in
NOTE Confidence: 0.86808455

00:43:13.300 --> 00:43:15.719 human studies by being able to carefully
NOTE Confidence: 0.86808455

00:43:15.719 --> 00:43:17.861 control the early life experiences of
NOTE Confidence: 0.86808455

00:43:17.921 --> 00:43:20.375 monkeys and study them across generations.
NOTE Confidence: 0.86808455

00:43:20.380 --> 00:43:22.762 And so these four rearing sequences
NOTE Confidence: 0.86808455

00:43:22.762 --> 00:43:25.333 that I just showed you allow us
NOTE Confidence: 0.86808455

00:43:25.333 --> 00:43:27.145 to test on the one hand,
NOTE Confidence: 0.86808455

00:43:27.150 --> 00:43:28.930 the potential benefit of sustained,
NOTE Confidence: 0.86808455

00:43:28.930 --> 00:43:30.490 secure attachment across generations
NOTE Confidence: 0.86808455

00:43:30.490 --> 00:43:33.178 here in the Blue Square and on
NOTE Confidence: 0.86808455

00:43:33.178 --> 00:43:35.180 the other hand we can also test
NOTE Confidence: 0.86808455

00:43:35.180 --> 00:43:37.219 whether it's possible to compensate.

NOTE Confidence: 0.86808455

00:43:37.220 --> 00:43:40.178 For a lack of secure attachment.

NOTE Confidence: 0.86808455

00:43:40.180 --> 00:43:43.120 Here in the red, on the right,

NOTE Confidence: 0.86808455

00:43:43.120 --> 00:43:45.886 and by comparing the differences in

NOTE Confidence: 0.86808455

00:43:45.886 --> 00:43:47.730 outcomes between the intergenerational

NOTE Confidence: 0.86808455

00:43:47.798 --> 00:43:49.418 groups here in the orange,

NOTE Confidence: 0.86808455

00:43:49.420 --> 00:43:51.682 we can describe how the effects

NOTE Confidence: 0.86808455

00:43:51.682 --> 00:43:54.220 on the offspring depend on the

NOTE Confidence: 0.86808455

00:43:54.220 --> 00:43:56.140 parents early rearing environments.

NOTE Confidence: 0.86808455

00:43:56.140 --> 00:43:58.660 An this comparison is something that

NOTE Confidence: 0.86808455

00:43:58.660 --> 00:43:59.920 economists call intergenerational

NOTE Confidence: 0.86808455

00:43:59.920 --> 00:44:00.340 complementarity,

NOTE Confidence: 0.86808455

00:44:00.340 --> 00:44:02.500 and this analysis allows us to

NOTE Confidence: 0.86808455

00:44:02.500 --> 00:44:04.857 learn more than just the benefit

NOTE Confidence: 0.86808455

00:44:04.857 --> 00:44:07.395 of secure attachments in a single

NOTE Confidence: 0.86808455

00:44:07.395 --> 00:44:09.730 generation the mother's generation.

NOTE Confidence: 0.86808455

00:44:09.730 --> 00:44:12.352 We can now learn about the
NOTE Confidence: 0.86808455

00:44:12.352 --> 00:44:13.663 importance of sustained,
NOTE Confidence: 0.86808455

00:44:13.670 --> 00:44:15.410 secure attachments across generations,
NOTE Confidence: 0.86808455

00:44:15.410 --> 00:44:18.519 as well as the importance of investing
NOTE Confidence: 0.86808455

00:44:18.519 --> 00:44:21.093 early in the parents generation versus
NOTE Confidence: 0.86808455

00:44:21.093 --> 00:44:23.753 trying to compare or to compensate
NOTE Confidence: 0.86808455

00:44:23.753 --> 00:44:25.497 in the offspring's generation.
NOTE Confidence: 0.86808455

00:44:25.500 --> 00:44:27.875 So our behavioral economics economist
NOTE Confidence: 0.86808455

00:44:27.875 --> 00:44:30.250 friends use their sophisticated equation
NOTE Confidence: 0.86808455

00:44:30.316 --> 00:44:32.506 modeling to conduct all these tests,
NOTE Confidence: 0.849866

00:44:32.510 --> 00:44:35.360 which I call fancy voodoo magic
NOTE Confidence: 0.849866

00:44:35.360 --> 00:44:38.140 and to calculate these benefits.
NOTE Confidence: 0.849866

00:44:38.140 --> 00:44:40.772 So we relied on archival data from
NOTE Confidence: 0.849866

00:44:40.772 --> 00:44:43.076 over 650 mother offspring pairs
NOTE Confidence: 0.849866

00:44:43.076 --> 00:44:45.272 with roughly equal representation
NOTE Confidence: 0.849866

00:44:45.272 --> 00:44:48.300 across the four rearing sequences.

NOTE Confidence: 0.849866

00:44:48.300 --> 00:44:50.388 An we first focused on initial

NOTE Confidence: 0.849866

00:44:50.388 --> 00:44:51.084 intergenerational impacts,

NOTE Confidence: 0.849866

00:44:51.090 --> 00:44:53.388 namely pregnancy outcomes did the infant's

NOTE Confidence: 0.849866

00:44:53.388 --> 00:44:56.328 birth result in a live birth yes or no?

NOTE Confidence: 0.849866

00:44:56.330 --> 00:44:58.724 Did the infant survive past the first

NOTE Confidence: 0.849866

00:44:58.724 --> 00:45:01.209 month and what was its birth weight?

NOTE Confidence: 0.849866

00:45:01.210 --> 00:45:03.256 And these can be considered pre

NOTE Confidence: 0.849866

00:45:03.256 --> 00:45:05.388 treatment outcomes since most of them

NOTE Confidence: 0.849866

00:45:05.388 --> 00:45:07.148 occur prior to randomize conditions.

NOTE Confidence: 0.8479589

00:45:09.470 --> 00:45:11.435 Now we found no intergenerational

NOTE Confidence: 0.8479589

00:45:11.435 --> 00:45:13.819 effect on the probability of an

NOTE Confidence: 0.8479589

00:45:13.819 --> 00:45:15.564 offspring being born live versus

NOTE Confidence: 0.8479589

00:45:15.564 --> 00:45:17.849 stillborn or on its birth weight.

NOTE Confidence: 0.8479589

00:45:17.850 --> 00:45:20.220 But we did find significant intergenerational

NOTE Confidence: 0.8479589

00:45:20.220 --> 00:45:21.800 effect on infant survivability,

NOTE Confidence: 0.8479589

00:45:21.800 --> 00:45:25.072 so infants of moms who were reared with
NOTE Confidence: 0.8479589

00:45:25.072 --> 00:45:27.791 their mothers had a survival rate that
NOTE Confidence: 0.8479589

00:45:27.791 --> 00:45:30.100 was 2.9% higher than infants reared
NOTE Confidence: 0.8479589

00:45:30.100 --> 00:45:32.470 by mothers who were nursery rears.
NOTE Confidence: 0.8479589

00:45:32.470 --> 00:45:36.187 I'll say that one more time the infants and
NOTE Confidence: 0.8479589

00:45:36.187 --> 00:45:39.605 mothers whose own mothers were mother weird.
NOTE Confidence: 0.8479589

00:45:39.610 --> 00:45:43.467 Had a 2.9% higher survival rate than
NOTE Confidence: 0.8479589

00:45:43.467 --> 00:45:47.118 infants whose mothers were nursery reared.
NOTE Confidence: 0.8479589

00:45:47.120 --> 00:45:49.580 So we then examine long term
NOTE Confidence: 0.8479589

00:45:49.580 --> 00:45:50.400 intergenerational impacts,
NOTE Confidence: 0.8479589

00:45:50.400 --> 00:45:52.860 both of which occurred after the
NOTE Confidence: 0.8479589

00:45:52.860 --> 00:45:54.500 experimental rearing conditions ended.
NOTE Confidence: 0.8479589

00:45:54.500 --> 00:45:55.730 After that relocation,
NOTE Confidence: 0.8479589

00:45:55.730 --> 00:45:57.780 and unlike the previous results,
NOTE Confidence: 0.8479589

00:45:57.780 --> 00:45:59.946 these outcomes can be affected both
NOTE Confidence: 0.8479589

00:45:59.946 --> 00:46:02.399 by the mother's ring condition and

NOTE Confidence: 0.8479589

00:46:02.399 --> 00:46:04.749 the offspring zone rearing condition.

NOTE Confidence: 0.8479589

00:46:04.750 --> 00:46:07.620 One of these outcomes was adolescent health,

NOTE Confidence: 0.8479589

00:46:07.620 --> 00:46:10.080 measured at one to three years,

NOTE Confidence: 0.8479589

00:46:10.080 --> 00:46:12.798 which is approximately 4 to 4

NOTE Confidence: 0.8479589

00:46:12.798 --> 00:46:15.440 to 12 years in humans.

NOTE Confidence: 0.8479589

00:46:15.440 --> 00:46:18.121 And for this we looked at the

NOTE Confidence: 0.8479589

00:46:18.121 --> 00:46:20.413 percentage of quarterly vet exams in

NOTE Confidence: 0.8479589

00:46:20.413 --> 00:46:22.891 which the animal was in good health,

NOTE Confidence: 0.8479589

00:46:22.900 --> 00:46:25.301 meaning the animal did not require treatment

NOTE Confidence: 0.8479589

00:46:25.301 --> 00:46:27.749 for a problem like wounding diarrhea,

NOTE Confidence: 0.8479589

00:46:27.750 --> 00:46:29.988 which is common in monkey colonies,

NOTE Confidence: 0.8479589

00:46:29.990 --> 00:46:30.734 skin rash,

NOTE Confidence: 0.8479589

00:46:30.734 --> 00:46:31.850 dermatitis surgeries, etc.

NOTE Confidence: 0.8479589

00:46:31.850 --> 00:46:33.655 And in adulthood we measured

NOTE Confidence: 0.8479589

00:46:33.655 --> 00:46:35.099 their social rank attainment

NOTE Confidence: 0.8479589

00:46:35.099 --> 00:46:37.068 and this was actually earlier.
NOTE Confidence: 0.8479589

00:46:37.070 --> 00:46:40.427 The age span range from 2 to 15 years,
NOTE Confidence: 0.8479589

00:46:40.430 --> 00:46:43.496 but the majority of animals were
NOTE Confidence: 0.8479589

00:46:43.496 --> 00:46:44.518 in adulthood.
NOTE Confidence: 0.8479589

00:46:44.520 --> 00:46:47.663 An the hear their relative rank in
NOTE Confidence: 0.8479589

00:46:47.663 --> 00:46:50.263 their social groups range from 0.05
NOTE Confidence: 0.8479589

00:46:50.263 --> 00:46:53.750 lowest on the totem pole to 1.0 highest.
NOTE Confidence: 0.8479589

00:46:53.750 --> 00:46:54.146 Alright,
NOTE Confidence: 0.8479589

00:46:54.146 --> 00:46:56.918 so for both health and social status,
NOTE Confidence: 0.8479589

00:46:56.920 --> 00:46:58.870 the only significant effects again
NOTE Confidence: 0.8479589

00:46:58.870 --> 00:47:00.820 war for Mother period offspring
NOTE Confidence: 0.8479589

00:47:00.887 --> 00:47:02.463 whose mothers were themselves
NOTE Confidence: 0.8479589

00:47:02.463 --> 00:47:04.433 mother reared for good health.
NOTE Confidence: 0.8479589

00:47:04.440 --> 00:47:07.212 This resulted in an increase of 6.7
NOTE Confidence: 0.8479589

00:47:07.212 --> 00:47:09.589 percentage points and for social rank.
NOTE Confidence: 0.8479589

00:47:09.590 --> 00:47:12.758 This resulted in an increase of .17 points,

NOTE Confidence: 0.8479589

00:47:12.760 --> 00:47:14.344 which is pretty remarkable

NOTE Confidence: 0.8479589

00:47:14.344 --> 00:47:16.720 considering the scope of the scale.

NOTE Confidence: 0.8479589

00:47:16.720 --> 00:47:19.390 Here I should say there were

NOTE Confidence: 0.8479589

00:47:19.390 --> 00:47:21.829 no no significant effects for

NOTE Confidence: 0.8479589

00:47:21.829 --> 00:47:23.557 other rearing sequences.

NOTE Confidence: 0.8479589

00:47:23.560 --> 00:47:25.610 So the big question is,

NOTE Confidence: 0.8479589

00:47:25.610 --> 00:47:27.174 is the difference in

NOTE Confidence: 0.8479589

00:47:27.174 --> 00:47:28.347 intergenerational effects Mother

NOTE Confidence: 0.8479589

00:47:28.347 --> 00:47:30.100 period versus nursery offspring?

NOTE Confidence: 0.8479589

00:47:30.100 --> 00:47:31.740 Is that statistically significant?

NOTE Confidence: 0.8479589

00:47:31.740 --> 00:47:32.150 Well,

NOTE Confidence: 0.8479589

00:47:32.150 --> 00:47:34.965 we formally tested this again

NOTE Confidence: 0.8479589

00:47:34.965 --> 00:47:36.654 by measuring intergenerational

NOTE Confidence: 0.8479589

00:47:36.654 --> 00:47:39.117 complementarity and the answer is yes.

NOTE Confidence: 0.8479589

00:47:39.120 --> 00:47:42.336 We found a strong and significant

NOTE Confidence: 0.8479589

00:47:42.336 --> 00:47:43.944 intergenerational complementarity such
NOTE Confidence: 0.8479589

00:47:43.944 --> 00:47:46.776 that the effect of secure attachment
NOTE Confidence: 0.8479589

00:47:46.776 --> 00:47:49.503 is more beneficial for offspring whose
NOTE Confidence: 0.8479589

00:47:49.503 --> 00:47:52.065 mothers also had a secure attachment.
NOTE Confidence: 0.8479589

00:47:52.070 --> 00:47:54.650 And the effect was as follows.
NOTE Confidence: 0.8479589

00:47:54.650 --> 00:47:55.526 Mother periods,
NOTE Confidence: 0.8479589

00:47:55.526 --> 00:47:58.154 offspring time and good health was
NOTE Confidence: 0.8479589

00:47:58.154 --> 00:48:00.262 increased by 9.7% versus nurture
NOTE Confidence: 0.8479589

00:48:00.262 --> 00:48:02.026 offspring and socialrank was
NOTE Confidence: 0.8479589

00:48:02.026 --> 00:48:04.666 increased by .24 points more and
NOTE Confidence: 0.8479589

00:48:04.666 --> 00:48:06.686 then for nursery reared offspring.
NOTE Confidence: 0.8479589

00:48:06.690 --> 00:48:09.174 Now because only mother period offspring
NOTE Confidence: 0.8479589

00:48:09.174 --> 00:48:11.420 can interact with their mothers.
NOTE Confidence: 0.8479589

00:48:11.420 --> 00:48:13.140 But nursery monkeys cannot.
NOTE Confidence: 0.8479589

00:48:13.140 --> 00:48:15.720 Any positive effects on Mother Period.
NOTE Confidence: 0.8479589

00:48:15.720 --> 00:48:18.372 Offspring here must be post needle

NOTE Confidence: 0.8479589

00:48:18.372 --> 00:48:20.683 because the in utero prenatal

NOTE Confidence: 0.8479589

00:48:20.683 --> 00:48:23.924 effects were the same for both groups.

NOTE Confidence: 0.8479589

00:48:23.930 --> 00:48:25.710 So we therefore conclude that

NOTE Confidence: 0.8479589

00:48:25.710 --> 00:48:27.134 the improved parenting received

NOTE Confidence: 0.8479589

00:48:27.134 --> 00:48:28.880 by Mother Period offspring,

NOTE Confidence: 0.8479589

00:48:28.880 --> 00:48:30.785 because their own mothers had

NOTE Confidence: 0.8479589

00:48:30.785 --> 00:48:32.690 secure attachments early in life.

NOTE Confidence: 0.8479589

00:48:32.690 --> 00:48:34.705 This improved parenting is the

NOTE Confidence: 0.8479589

00:48:34.705 --> 00:48:36.317 primary channel through which

NOTE Confidence: 0.8479589

00:48:36.317 --> 00:48:38.129 early life advantage in the

NOTE Confidence: 0.8479589

00:48:38.129 --> 00:48:40.145 parents generation in the form of

NOTE Confidence: 0.8429239

00:48:40.208 --> 00:48:42.554 a secure attachment is transmitted to

NOTE Confidence: 0.8429239

00:48:42.554 --> 00:48:44.876 the next generation versus prenatal in

NOTE Confidence: 0.8429239

00:48:44.876 --> 00:48:47.522 utero effects and it's clear now that

NOTE Confidence: 0.8429239

00:48:47.522 --> 00:48:50.220 these effects start very early in life,

NOTE Confidence: 0.8429239

00:48:50.220 --> 00:48:52.125 as evidenced by survival rates
NOTE Confidence: 0.8429239

00:48:52.125 --> 00:48:53.649 and persist until adulthood,
NOTE Confidence: 0.8429239

00:48:53.650 --> 00:48:55.170 as evidenced by socialrank.
NOTE Confidence: 0.87613845

00:48:58.120 --> 00:49:00.970 So these first findings on intergenerational
NOTE Confidence: 0.87613845

00:49:00.970 --> 00:49:03.531 effects of early advantage have
NOTE Confidence: 0.87613845

00:49:03.531 --> 00:49:05.289 really important implications.
NOTE Confidence: 0.87613845

00:49:05.290 --> 00:49:08.573 There is strong importance to ensure that
NOTE Confidence: 0.87613845

00:49:08.573 --> 00:49:11.430 all children experience secure attachments,
NOTE Confidence: 0.87613845

00:49:11.430 --> 00:49:13.938 particularly children who start
NOTE Confidence: 0.87613845

00:49:13.938 --> 00:49:17.073 out life in with disadvantage.
NOTE Confidence: 0.87613845

00:49:17.080 --> 00:49:19.295 These findings also really underscore
NOTE Confidence: 0.87613845

00:49:19.295 --> 00:49:21.953 the need for investments into parents
NOTE Confidence: 0.87613845

00:49:21.953 --> 00:49:24.585 and families not just into children or
NOTE Confidence: 0.87613845

00:49:24.585 --> 00:49:27.128 infants so that families can engage
NOTE Confidence: 0.87613845

00:49:27.128 --> 00:49:29.273 in forming secure attachments with
NOTE Confidence: 0.87613845

00:49:29.273 --> 00:49:31.815 their children and when parents and

NOTE Confidence: 0.87613845

00:49:31.815 --> 00:49:33.920 caregivers and families are denied,

NOTE Confidence: 0.87613845

00:49:33.920 --> 00:49:36.968 denied. Access to.

NOTE Confidence: 0.87613845

00:49:36.968 --> 00:49:39.563 Abilities to enable them to

NOTE Confidence: 0.87613845

00:49:39.563 --> 00:49:41.790 meet their basic needs,

NOTE Confidence: 0.87613845

00:49:41.790 --> 00:49:43.705 they just don't have the

NOTE Confidence: 0.87613845

00:49:43.705 --> 00:49:45.620 resources to Additionally be able

NOTE Confidence: 0.87613845

00:49:45.688 --> 00:49:47.338 to form the secure bonds.

NOTE Confidence: 0.87613845

00:49:47.340 --> 00:49:48.820 So when they're denied

NOTE Confidence: 0.87613845

00:49:48.820 --> 00:49:50.300 extended paid parental leave,

NOTE Confidence: 0.87613845

00:49:50.300 --> 00:49:52.442 both mothers and fathers when they

NOTE Confidence: 0.87613845

00:49:52.442 --> 00:49:55.063 don't have access to high quality early

NOTE Confidence: 0.87613845

00:49:55.063 --> 00:49:57.695 childhood education an also by the way,

NOTE Confidence: 0.87613845

00:49:57.700 --> 00:49:59.624 when early educators are

NOTE Confidence: 0.87613845

00:49:59.624 --> 00:50:01.067 not paid appropriately.

NOTE Confidence: 0.87613845

00:50:01.070 --> 00:50:03.074 When people don't have a living

NOTE Confidence: 0.87613845

00:50:03.074 --> 00:50:05.149 wage and when they lack food,
NOTE Confidence: 0.87613845

00:50:05.150 --> 00:50:06.458 housing and health security,
NOTE Confidence: 0.87613845

00:50:06.458 --> 00:50:09.487 you can begin to see how it could be
NOTE Confidence: 0.87613845

00:50:09.487 --> 00:50:11.485 much harder to invest the resources
NOTE Confidence: 0.87613845

00:50:11.485 --> 00:50:13.618 needed in forming secure attachments that
NOTE Confidence: 0.87613845

00:50:13.618 --> 00:50:17.999 those of us with more privileged means have.
NOTE Confidence: 0.87613845

00:50:18.000 --> 00:50:19.134 So what's next?
NOTE Confidence: 0.87613845

00:50:19.134 --> 00:50:19.512 Well,
NOTE Confidence: 0.87613845

00:50:19.512 --> 00:50:21.402 with current and future funding,
NOTE Confidence: 0.87613845

00:50:21.410 --> 00:50:23.684 we aim to identify the biological
NOTE Confidence: 0.87613845

00:50:23.684 --> 00:50:25.200 mechanisms of secure attachments.
NOTE Confidence: 0.87613845

00:50:25.200 --> 00:50:27.100 At least some of them,
NOTE Confidence: 0.87613845

00:50:27.100 --> 00:50:29.543 and so with this current NSF funding
NOTE Confidence: 0.87613845

00:50:29.543 --> 00:50:31.475 in collaboration with Michael Kobor
NOTE Confidence: 0.87613845

00:50:31.475 --> 00:50:33.535 at University of British Columbia,
NOTE Confidence: 0.87613845

00:50:33.540 --> 00:50:35.808 we're going to look at DNA

NOTE Confidence: 0.87613845

00:50:35.808 --> 00:50:36.942 metalation across generations.

NOTE Confidence: 0.87613845

00:50:36.950 --> 00:50:39.176 As one of these under the skin

NOTE Confidence: 0.87613845

00:50:39.176 --> 00:50:41.643 mechanisms an we're also going to begin

NOTE Confidence: 0.87613845

00:50:41.643 --> 00:50:43.815 probing in inflammation both within a

NOTE Confidence: 0.87613845

00:50:43.885 --> 00:50:46.430 single generation an across generations,

NOTE Confidence: 0.87613845

00:50:46.430 --> 00:50:49.010 and I've just recently been awarded.

NOTE Confidence: 0.87613845

00:50:49.010 --> 00:50:50.900 This pilot award from the animal

NOTE Confidence: 0.87613845

00:50:50.900 --> 00:50:53.025 models for the social dimensions of

NOTE Confidence: 0.87613845

00:50:53.025 --> 00:50:55.025 health and Aging Research Network,

NOTE Confidence: 0.87613845

00:50:55.030 --> 00:50:56.795 which is a National Institute

NOTE Confidence: 0.87613845

00:50:56.795 --> 00:50:58.207 of Aging Research Network,

NOTE Confidence: 0.87613845

00:50:58.210 --> 00:51:00.262 to start looking at a chronic

NOTE Confidence: 0.87613845

00:51:00.262 --> 00:51:02.110 inflammation across the life course,

NOTE Confidence: 0.87613845

00:51:02.110 --> 00:51:04.612 and I plan in the next few months to

NOTE Confidence: 0.87613845

00:51:04.612 --> 00:51:07.048 apply for further funding from the

NOTE Confidence: 0.87613845

00:51:07.048 --> 00:51:09.540 foundations and institutes you see here,
NOTE Confidence: 0.87613845

00:51:09.540 --> 00:51:10.602 including one opportunity.
NOTE Confidence: 0.87613845

00:51:10.602 --> 00:51:12.018 I'm really excited about.
NOTE Confidence: 0.87613845

00:51:12.020 --> 00:51:13.253 Again from NIH.
NOTE Confidence: 0.87613845

00:51:13.253 --> 00:51:15.308 It's for early stage investigators
NOTE Confidence: 0.87613845

00:51:15.308 --> 00:51:17.150 using nonhuman primate models.
NOTE Confidence: 0.87613845

00:51:17.150 --> 00:51:20.230 And in addition to these two DNA,
NOTE Confidence: 0.87613845

00:51:20.230 --> 00:51:21.823 metalation information will
NOTE Confidence: 0.87613845

00:51:21.823 --> 00:51:24.478 obviously also be probing for
NOTE Confidence: 0.87613845

00:51:24.478 --> 00:51:26.410 other biological mechanisms.
NOTE Confidence: 0.87613845

00:51:26.410 --> 00:51:29.164 I also want to take a moment to talk
NOTE Confidence: 0.87613845

00:51:29.164 --> 00:51:31.660 about how we're expanding our hair.
NOTE Confidence: 0.87613845

00:51:31.660 --> 00:51:33.940 Cortisol or chronic stress studies
NOTE Confidence: 0.87613845

00:51:33.940 --> 00:51:36.512 so we're acquiring equipment now to
NOTE Confidence: 0.87613845

00:51:36.512 --> 00:51:38.959 set up a lab to be able to run her
NOTE Confidence: 0.87613845

00:51:38.959 --> 00:51:41.458 cortisol assays here in house at Yale,

NOTE Confidence: 0.87613845

00:51:41.460 --> 00:51:43.265 and I'm really bummed because

NOTE Confidence: 0.87613845

00:51:43.265 --> 00:51:45.464 right before Pandemic hit and we

NOTE Confidence: 0.87613845

00:51:45.464 --> 00:51:47.408 were required to go into lockdown,

NOTE Confidence: 0.87613845

00:51:47.410 --> 00:51:49.426 I was just preparing an IRB protocol

NOTE Confidence: 0.87613845

00:51:49.426 --> 00:51:51.643 to study with a colleague and

NOTE Confidence: 0.87613845

00:51:51.643 --> 00:51:53.359 collaborator University of Virginia.

NOTE Confidence: 0.87613845

00:51:53.360 --> 00:51:55.388 A different type of early life

NOTE Confidence: 0.87613845

00:51:55.388 --> 00:51:57.380 experience and that is bearable.

NOTE Confidence: 0.87613845

00:51:57.380 --> 00:51:58.270 Educational environments,

NOTE Confidence: 0.87613845

00:51:58.270 --> 00:52:01.385 so we're going to compare a children

NOTE Confidence: 0.87613845

00:52:01.385 --> 00:52:03.569 in public Montessori schools

NOTE Confidence: 0.87613845

00:52:03.569 --> 00:52:05.797 with standard public education.

NOTE Confidence: 0.87613845

00:52:05.800 --> 00:52:07.949 Pedagogy and look at see how their

NOTE Confidence: 0.87613845

00:52:07.949 --> 00:52:09.582 hair cortisol change across the

NOTE Confidence: 0.87613845

00:52:09.582 --> 00:52:11.526 year and how that influenced their

NOTE Confidence: 0.87613845

00:52:11.526 --> 00:52:13.690 academic and social emotional outcomes.

NOTE Confidence: 0.87613845

00:52:13.690 --> 00:52:15.608 So we hope to resume this once

NOTE Confidence: 0.87613845

00:52:15.608 --> 00:52:18.147 it's safe to do so with additional

NOTE Confidence: 0.87613845

00:52:18.147 --> 00:52:20.202 colleagues at University of Chicago,

NOTE Confidence: 0.8342103

00:52:20.210 --> 00:52:22.256 we just submitted a research grant,

NOTE Confidence: 0.8342103

00:52:22.260 --> 00:52:24.605 a small pilot award to look at

NOTE Confidence: 0.8342103

00:52:24.605 --> 00:52:26.838 the hair cortisol of black mothers

NOTE Confidence: 0.8342103

00:52:26.838 --> 00:52:29.142 whose prenatal and post Natal care

NOTE Confidence: 0.8342103

00:52:29.142 --> 00:52:31.557 has been disrupted due to covid.

NOTE Confidence: 0.8342103

00:52:31.560 --> 00:52:33.525 And with colleagues here at

NOTE Confidence: 0.8342103

00:52:33.525 --> 00:52:35.490 the Yale School of Nursing,

NOTE Confidence: 0.8342103

00:52:35.490 --> 00:52:37.848 we're about to submit a grant

NOTE Confidence: 0.8342103

00:52:37.848 --> 00:52:39.824 to the National Heart, Lung,

NOTE Confidence: 0.8342103

00:52:39.824 --> 00:52:41.844 and Blood Institute to examine

NOTE Confidence: 0.8342103

00:52:41.844 --> 00:52:43.740 how chronic stress may be,

NOTE Confidence: 0.8342103

00:52:43.740 --> 00:52:46.180 what role it may have in a sleep

NOTE Confidence: 0.8342103

00:52:46.180 --> 00:52:48.459 disorders and cardiovascular function.

NOTE Confidence: 0.8342103

00:52:48.460 --> 00:52:50.425 But one could also envision

NOTE Confidence: 0.8342103

00:52:50.425 --> 00:52:52.390 studying other hormones in her.

NOTE Confidence: 0.8342103

00:52:52.390 --> 00:52:53.962 It's possible to measure,

NOTE Confidence: 0.8342103

00:52:53.962 --> 00:52:55.172 for example, progesterone,

NOTE Confidence: 0.8342103

00:52:55.172 --> 00:52:56.438 estradiol and testosterone,

NOTE Confidence: 0.8342103

00:52:56.438 --> 00:52:59.748 and maybe some of you have an interest

NOTE Confidence: 0.8342103

00:52:59.748 --> 00:53:01.890 in studying other elements in her.

NOTE Confidence: 0.8342103

00:53:01.890 --> 00:53:03.286 That might measure environmental

NOTE Confidence: 0.8342103

00:53:03.286 --> 00:53:05.031 exposures like trace elements or

NOTE Confidence: 0.8342103

00:53:05.031 --> 00:53:06.760 heavy metals or tobacco exposure.

NOTE Confidence: 0.8342103

00:53:06.760 --> 00:53:09.883 So if any of these sound interesting to you,

NOTE Confidence: 0.8342103

00:53:09.890 --> 00:53:13.022 please get in touch with me after the talk.

NOTE Confidence: 0.859246550000001

00:53:15.170 --> 00:53:17.218 And so with that I would like to

NOTE Confidence: 0.859246550000001

00:53:17.218 --> 00:53:18.861 conclude by acknowledging our funders

NOTE Confidence: 0.859246550000001

00:53:18.861 --> 00:53:21.346 have made all of this work possible
NOTE Confidence: 0.859246550000001

00:53:21.413 --> 00:53:23.279 today that I've shared with you,
NOTE Confidence: 0.859246550000001

00:53:23.280 --> 00:53:25.457 along with the numerous people who work
NOTE Confidence: 0.859246550000001

00:53:25.457 --> 00:53:27.648 behind the scenes to present these data.
NOTE Confidence: 0.859246550000001

00:53:27.650 --> 00:53:30.251 And I would be remiss if I did not
NOTE Confidence: 0.859246550000001

00:53:30.251 --> 00:53:32.047 acknowledge my own caregivers who gave
NOTE Confidence: 0.859246550000001

00:53:32.047 --> 00:53:34.245 me the best form of secure attachment
NOTE Confidence: 0.859246550000001

00:53:34.245 --> 00:53:37.005 from the moment I was born two months
NOTE Confidence: 0.859246550000001

00:53:37.010 --> 00:53:39.482 early as a preemie who could fit in
NOTE Confidence: 0.859246550000001

00:53:39.482 --> 00:53:42.310 a shoe box all the way up until now.
NOTE Confidence: 0.859246550000001

00:53:42.310 --> 00:53:44.459 Not only do they provide me with
NOTE Confidence: 0.859246550000001

00:53:44.459 --> 00:53:46.088 the secure loving base, but.
NOTE Confidence: 0.859246550000001

00:53:46.088 --> 00:53:47.440 Pretty good peer interactions
NOTE Confidence: 0.859246550000001

00:53:47.440 --> 00:53:48.792 with my sister too.
NOTE Confidence: 0.859246550000001

00:53:48.800 --> 00:53:51.256 So with that I'm going to leave you
NOTE Confidence: 0.859246550000001

00:53:51.256 --> 00:53:53.829 with one more quote by Harry Harlow,

NOTE Confidence: 0.859246550000001

00:53:53.830 --> 00:53:57.407 perhaps, and in which he was describing.

NOTE Confidence: 0.859246550000001

00:53:57.410 --> 00:54:00.175 An anecdotal behavior he had seen where

NOTE Confidence: 0.859246550000001

00:54:00.175 --> 00:54:02.928 a monkey used a stick as a weapon.

NOTE Confidence: 0.859246550000001

00:54:02.930 --> 00:54:04.724 Perhaps we should be criticized for

NOTE Confidence: 0.859246550000001

00:54:04.724 --> 00:54:06.340 not reporting these behaviors earlier,

NOTE Confidence: 0.859246550000001

00:54:06.340 --> 00:54:07.568 but in my defense,

NOTE Confidence: 0.859246550000001

00:54:07.568 --> 00:54:10.060 let me state that in the mid 30s,

NOTE Confidence: 0.859246550000001

00:54:10.060 --> 00:54:11.364 comparative psychology had attained

NOTE Confidence: 0.859246550000001

00:54:11.364 --> 00:54:13.320 a level of objectivity that made

NOTE Confidence: 0.859246550000001

00:54:13.370 --> 00:54:14.640 reporting such behavior a matter

NOTE Confidence: 0.859246550000001

00:54:14.640 --> 00:54:16.320 of grave risk to the reputation

NOTE Confidence: 0.859246550000001

00:54:16.320 --> 00:54:18.115 of any ambitious young scientists.

NOTE Confidence: 0.859246550000001

00:54:18.120 --> 00:54:21.109 And it is better to become famous

NOTE Confidence: 0.859246550000001

00:54:21.109 --> 00:54:24.346 slowly than to be right all at once.

NOTE Confidence: 0.859246550000001

00:54:24.350 --> 00:54:26.310 Alright, so that is it.

NOTE Confidence: 0.859246550000001

00:54:26.310 --> 00:54:28.788 Thank you very much all for being
NOTE Confidence: 0.859246550000001

00:54:28.788 --> 00:54:31.779 here and and especially for you know,
NOTE Confidence: 0.859246550000001

00:54:31.780 --> 00:54:34.433 enlightening me in here and let me
NOTE Confidence: 0.859246550000001

00:54:34.433 --> 00:54:36.859 regale you with my monkey tails.
NOTE Confidence: 0.859246550000001

00:54:36.860 --> 00:54:41.868 So thank you. Amanda, thank you so much.
NOTE Confidence: 0.859246550000001

00:54:41.870 --> 00:54:43.220 We are out of time,
NOTE Confidence: 0.859246550000001

00:54:43.220 --> 00:54:45.092 but we're going to leave them open and
NOTE Confidence: 0.859246550000001

00:54:45.092 --> 00:54:46.869 I'll stick around and whomever wants
NOTE Confidence: 0.859246550000001

00:54:46.869 --> 00:54:48.444 to stick around Papparazi's questions
NOTE Confidence: 0.859246550000001

00:54:48.444 --> 00:54:50.172 if you need to leave, that's fine.
NOTE Confidence: 0.859246550000001

00:54:50.172 --> 00:54:52.630 If you want to stay hang out but Amanda,
NOTE Confidence: 0.859246550000001

00:54:52.630 --> 00:54:54.506 thank you. I will be so much.
NOTE Confidence: 0.859246550000001

00:54:54.510 --> 00:54:54.788 Yes,
NOTE Confidence: 0.859246550000001

00:54:54.788 --> 00:54:57.012 thank you so much for the invitation on
NOTE Confidence: 0.859246550000001

00:54:57.012 --> 00:54:59.345 race and I really hope to see as many of
NOTE Confidence: 0.859246550000001

00:54:59.345 --> 00:55:01.510 you as possible in person again soon.

NOTE Confidence: 0.859246550000001
00:55:01.510 --> 00:55:02.208 Thank you.