



1
00:00:03,300 --> 00:00:09,350

[Music]

2
00:00:15,439 --> 00:00:13,009

I think many of us have had experiences

3
00:00:19,760 --> 00:00:15,449

at some time or another that might be

4
00:00:20,929 --> 00:00:19,770

characterized as beginner's luck Paulo I

5
00:00:22,670 --> 00:00:20,939

can never know I don't know how to

6
00:00:25,150 --> 00:00:22,680

pronounce his name quello the author of

7
00:00:27,889 --> 00:00:25,160

the bestseller The Alchemist I just

8
00:00:29,839 --> 00:00:27,899

suggested in his book that every search

9
00:00:31,519 --> 00:00:29,849

begins with beginner's luck and ends

10
00:00:33,650 --> 00:00:31,529

with the victors being severely tested

11
00:00:36,049 --> 00:00:33,660

and many of us I think have had

12
00:00:37,880 --> 00:00:36,059

experiences where when we try something

13
00:00:40,610 --> 00:00:37,890

new for the first time for whatever

14

00:00:44,330 --> 00:00:40,620

reason it seems to work remarkably well

15

00:00:47,030 --> 00:00:44,340

and then as we try to do it further it

16

00:00:48,260 --> 00:00:47,040

becomes more and more difficult I've

17

00:00:49,819 --> 00:00:48,270

personally experienced this and this

18

00:00:52,880 --> 00:00:49,829

will be part of my talk I've experienced

19

00:00:55,670 --> 00:00:52,890

this in in many realms of my own

20

00:00:57,590 --> 00:00:55,680

research but also I think even it seems

21

00:00:59,510 --> 00:00:57,600

as if there is a the at least the

22

00:01:01,520 --> 00:00:59,520

illusion that this happens in all realms

23

00:01:03,950 --> 00:01:01,530

of life there when we try we go to a

24

00:01:05,660 --> 00:01:03,960

place for the first time we try a new

25

00:01:08,120 --> 00:01:05,670

activity for the first time somehow it

26
00:01:09,499 --> 00:01:08,130
seems to really just open up to us and

27
00:01:12,590 --> 00:01:09,509
then as we keep working at it it's not

28
00:01:16,960 --> 00:01:12,600
as easy as it first appeared this is

29
00:01:20,450 --> 00:01:16,970
basic idea of beginner's luck seems to

30
00:01:23,330 --> 00:01:20,460
apply in research as well as certainly

31
00:01:26,899 --> 00:01:23,340
has been my experience it seems to be a

32
00:01:28,850 --> 00:01:26,909
ubiquitous aspect of research that our

33
00:01:31,670 --> 00:01:28,860
associate with a level of success that

34
00:01:35,660 --> 00:01:31,680
is then subsequently hard to replicate

35
00:01:37,789 --> 00:01:35,670
and I've observed this in a variety

36
00:01:40,760 --> 00:01:37,799
different ways but it was first noted by

37
00:01:42,679 --> 00:01:40,770
Rhine when he was attempting to

38
00:01:45,620 --> 00:01:42,689

characterize the drop in performance of

39

00:01:49,100 --> 00:01:45,630

one of his star clairvoyant participants

40

00:01:53,630 --> 00:01:49,110

who showed absolutely amazing ability to

41

00:01:56,749 --> 00:01:53,640

anticipate the nature of cards and then

42

00:02:00,170 --> 00:01:56,759

over time gradually diminished in his

43

00:02:02,920 --> 00:02:00,180

capacity to do this and this a basic

44

00:02:07,300 --> 00:02:02,930

notion of the decline effect has been

45

00:02:10,550 --> 00:02:07,310

recognized first and foremost in the SCI

46

00:02:13,160 --> 00:02:10,560

literature a Dean Radin in his book

47

00:02:15,649 --> 00:02:13,170

entangled Minds refers to it saying a

48

00:02:17,390 --> 00:02:15,659

frequent observation inside research is

49

00:02:19,280 --> 00:02:17,400

that when a new experiment is first

50

00:02:21,530 --> 00:02:19,290

conducted the outcomes are strikingly

51

00:02:23,540 --> 00:02:21,540
successful then as others try to

52

00:02:26,260 --> 00:02:23,550
replicate the effect they

53

00:02:29,450 --> 00:02:26,270
the effects they begin to fade and

54

00:02:31,040 --> 00:02:29,460
indeed and notably and this may be part

55

00:02:33,440 --> 00:02:31,050
of the secret of his success

56

00:02:35,810 --> 00:02:33,450
Dean Indyk has indicated he never tries

57

00:02:38,630 --> 00:02:35,820
to totally replicate prior findings as

58

00:02:41,510 --> 00:02:38,640
always you know changing the paradigm in

59

00:02:44,170 --> 00:02:41,520
particular ways and this may be a one of

60

00:02:46,670 --> 00:02:44,180
the critical secrets to a success and to

61

00:02:48,710 --> 00:02:46,680
others who have had a success in this

62

00:02:51,470 --> 00:02:48,720
field but it also may be one of the

63

00:02:56,690 --> 00:02:51,480

critical sources of why it's been so

64

00:02:59,000 --> 00:02:56,700

hard to get syphax to establish because

65

00:03:01,310 --> 00:02:59,010

when other people try to replicate the

66

00:03:04,160 --> 00:03:01,320

paradigms exactly they don't get the

67

00:03:07,130 --> 00:03:04,170

same degree of success as the original

68

00:03:10,850 --> 00:03:07,140

studies did um what I want to do today

69

00:03:13,160 --> 00:03:10,860

is to talk about examples of the decline

70

00:03:16,400 --> 00:03:13,170

effect both in my personal research and

71

00:03:19,780 --> 00:03:16,410

then also in other areas of Syre search

72

00:03:22,040 --> 00:03:19,790

in other areas of traditional

73

00:03:24,800 --> 00:03:22,050

conventional areas of research and then

74

00:03:28,790 --> 00:03:24,810

consider some of the different possible

75

00:03:30,770 --> 00:03:28,800

explanations that may be driving it so

76

00:03:32,300 --> 00:03:30,780

let me begin with my own personal

77

00:03:35,890 --> 00:03:32,310

experiences with the decline effect I

78

00:03:38,900 --> 00:03:35,900

started off as a graduate student

79

00:03:42,680 --> 00:03:38,910

investigating a phenomena that I came to

80

00:03:45,500 --> 00:03:42,690

call verbal overshadowing and verbal

81

00:03:47,210 --> 00:03:45,510

overshadowing is the finding that if you

82

00:03:50,210 --> 00:03:47,220

wear the paradigm worked as follows

83

00:03:51,949 --> 00:03:50,220

people would view say a videotape of a

84

00:03:53,150 --> 00:03:51,959

bank robbery and then one group of

85

00:03:55,100 --> 00:03:53,160

participants would be asked to describe

86

00:03:56,990 --> 00:03:55,110

in as much detail as possible the

87

00:03:58,370 --> 00:03:57,000

appearance of the face and another group

88

00:04:00,620 --> 00:03:58,380

of individuals would engage in an

89

00:04:03,410 --> 00:04:00,630

unrelated activity and then they were

90

00:04:05,210 --> 00:04:03,420

given a lineup now standard theories

91

00:04:06,680 --> 00:04:05,220

would suggest that engaging in verbal

92

00:04:09,020 --> 00:04:06,690

description would be a form of verbal

93

00:04:10,370 --> 00:04:09,030

rehearsal that this should be helpful

94

00:04:12,080 --> 00:04:10,380

and that the people who describe the

95

00:04:14,120 --> 00:04:12,090

face should be at least as good if not

96

00:04:17,020 --> 00:04:14,130

better than the people who didn't but we

97

00:04:19,159 --> 00:04:17,030

found was a rather substantial a

98

00:04:21,080 --> 00:04:19,169

negative effect such that when people

99

00:04:22,640 --> 00:04:21,090

describe the face they're actually less

100

00:04:24,710 --> 00:04:22,650

good at recognizing it than those

101
00:04:28,610 --> 00:04:24,720
individuals who engaged in an unrelated

102
00:04:32,360 --> 00:04:28,620
activity I replicated this effect five

103
00:04:33,500 --> 00:04:32,370
times in the original set of studies

104
00:04:36,980 --> 00:04:33,510
that were published in cognitive

105
00:04:39,310 --> 00:04:36,990
psychology and without difficulty was

106
00:04:41,630 --> 00:04:39,320
very easy to get the effect at that time

107
00:04:44,120 --> 00:04:41,640
subsequently as I continued to try to

108
00:04:45,920 --> 00:04:44,130
replicate this effect I found increasing

109
00:04:48,020 --> 00:04:45,930
difficulty I got it sometimes other

110
00:04:52,430 --> 00:04:48,030
times not the effects got much smaller I

111
00:04:54,860 --> 00:04:52,440
have a whole you know boxes of fail vert

112
00:04:57,590 --> 00:04:54,870
failed versions of this experiment and

113
00:05:00,590 --> 00:04:57,600

it was it was really very disheartening

114

00:05:02,120 --> 00:05:00,600

what I discovered was rather than trying

115

00:05:04,760 --> 00:05:02,130

to replicate verbal overshadowing effect

116

00:05:06,980 --> 00:05:04,770

with faces my best bet was to always try

117

00:05:08,300 --> 00:05:06,990

new areas and so we did it in a number

118

00:05:11,900 --> 00:05:08,310

of different domains we did with color

119

00:05:13,760 --> 00:05:11,910

we did it with tastes and shapes and

120

00:05:15,500 --> 00:05:13,770

various other things like that and what

121

00:05:18,710 --> 00:05:15,510

again what we found in these different

122

00:05:20,090 --> 00:05:18,720

areas is the first time we first a

123

00:05:22,280 --> 00:05:20,100

second time we get the effect but then

124

00:05:24,530 --> 00:05:22,290

as we tried to replicate that it would

125

00:05:25,820 --> 00:05:24,540

go away so we got it with music but that

126

00:05:27,620 --> 00:05:25,830

failed to replicate it we got it with

127

00:05:28,910 --> 00:05:27,630

color but that failed to replicate we

128

00:05:31,100 --> 00:05:28,920

got I don't have it listed here we got

129

00:05:32,780 --> 00:05:31,110

it with maps describing a map and then

130

00:05:34,580 --> 00:05:32,790

that failed to replicate so all these

131

00:05:36,500 --> 00:05:34,590

different cases were the first time we

132

00:05:38,090 --> 00:05:36,510

did an experiment or maybe the second we

133

00:05:40,160 --> 00:05:38,100

get the effect and then after that the

134

00:05:42,680 --> 00:05:40,170

effect we get smaller we also observe

135

00:05:44,420 --> 00:05:42,690

this not only with respect to nonverbal

136

00:05:46,940 --> 00:05:44,430

memories but also with respect to other

137

00:05:49,010 --> 00:05:46,950

sort of variations on the paradigm so in

138

00:05:51,980 --> 00:05:49,020

one series of studies these were four

139

00:05:54,650 --> 00:05:51,990

experiments published in JP general we

140

00:05:57,610 --> 00:05:54,660

had people think out loud while trying

141

00:05:59,750 --> 00:05:57,620

to solve insight problems or engage in

142

00:06:01,550 --> 00:05:59,760

silent solving so again the idea is that

143

00:06:03,650 --> 00:06:01,560

verbalization is somehow messing them up

144

00:06:05,810 --> 00:06:03,660

we got the effect quite robustly in

145

00:06:07,610 --> 00:06:05,820

those first series of four studies but

146

00:06:09,470 --> 00:06:07,620

then subsequently increasingly had

147

00:06:11,780 --> 00:06:09,480

difficulty replicating that effect in

148

00:06:13,940 --> 00:06:11,790

another study we used a paradigm known

149

00:06:16,070 --> 00:06:13,950

as implicit learning in which

150

00:06:17,660 --> 00:06:16,080

individuals are given artificial

151
00:06:19,400 --> 00:06:17,670
grammars and they have to learn new

152
00:06:21,710 --> 00:06:19,410
examples again we found when people

153
00:06:23,900 --> 00:06:21,720
fought out loud it disrupted performance

154
00:06:26,150 --> 00:06:23,910
subsequent replications failed to get

155
00:06:28,220 --> 00:06:26,160
that effect another paradigm was

156
00:06:30,530 --> 00:06:28,230
analogical retrieval where we had people

157
00:06:33,260 --> 00:06:30,540
think out loud while trying to remember

158
00:06:34,970 --> 00:06:33,270
what analogies were two stories that

159
00:06:37,550 --> 00:06:34,980
they'd heard before worked great at

160
00:06:41,660 --> 00:06:37,560
first and then dissipated so I've

161
00:06:43,430 --> 00:06:41,670
observed this fading effect just

162
00:06:44,900 --> 00:06:43,440
countless times in my mainstream

163
00:06:47,180 --> 00:06:44,910

research I'm just curious how many

164

00:06:49,190 --> 00:06:47,190

people in the audience who are

165

00:06:50,810 --> 00:06:49,200

researchers have also experienced a

166

00:06:53,030 --> 00:06:50,820

climb flex let's just get a raise

167

00:06:56,270 --> 00:06:53,040

of hands here okay so as you can see

168

00:06:57,830 --> 00:06:56,280

this is a how many people are just to

169

00:06:59,030 --> 00:06:57,840

get a sense how many people have done

170

00:07:02,530 --> 00:06:59,040

have gotten effects and they've never

171

00:07:04,910 --> 00:07:02,540

seen decline effects okay so you can see

172

00:07:06,500 --> 00:07:04,920

majority people who do research have

173

00:07:07,730 --> 00:07:06,510

experienced these decline effects it's

174

00:07:10,250 --> 00:07:07,740

important to you know get your base

175

00:07:12,440 --> 00:07:10,260

right here so this seems to be it's not

176

00:07:13,850 --> 00:07:12,450

just that you know sometimes some people

177

00:07:16,160 --> 00:07:13,860

publish the experiment and then other

178

00:07:18,740 --> 00:07:16,170

people don't the very same researcher

179

00:07:22,930 --> 00:07:18,750

can get the effect and then watch it

180

00:07:25,940 --> 00:07:22,940

dwindled so now I've also been doing a

181

00:07:27,830 --> 00:07:25,950

parapsychology research I'm it's it's

182

00:07:29,390 --> 00:07:27,840

somewhat unusual for somebody who's been

183

00:07:31,850 --> 00:07:29,400

doing the mainstream research to degree

184

00:07:34,730 --> 00:07:31,860

that I have to be doing this and I am

185

00:07:38,660 --> 00:07:34,740

totally aware of the fact that this does

186

00:07:41,330 --> 00:07:38,670

make me vulnerable to criticism among my

187

00:07:42,860 --> 00:07:41,340

mainstream colleagues but I still am

188

00:07:44,450 --> 00:07:42,870

persuaded that the evidence is

189

00:07:46,820 --> 00:07:44,460

sufficiently compelling that it's worth

190

00:07:48,590 --> 00:07:46,830

pursuing so I've been doing this I've

191

00:07:50,210 --> 00:07:48,600

looked at precognition in two different

192

00:07:51,830 --> 00:07:50,220

domains what I'd like to do is to tell

193

00:07:54,950 --> 00:07:51,840

you about both of those paradigms and

194

00:07:57,740 --> 00:07:54,960

then show you in both cases the decline

195

00:08:00,440 --> 00:07:57,750

effect the first paradigm both by the

196

00:08:03,410 --> 00:08:00,450

way both of these paradigms are closely

197

00:08:07,790 --> 00:08:03,420

related to a series of studies that just

198

00:08:09,410 --> 00:08:07,800

came out in Journal books JP SP one of

199

00:08:11,240 --> 00:08:09,420

the the flagship journal in social

200

00:08:13,040 --> 00:08:11,250

psychology by Daryl BEM many of you

201
00:08:16,910 --> 00:08:13,050
probably are familiar with that said I

202
00:08:19,730 --> 00:08:16,920
was a reviewer on that for that study

203
00:08:21,920 --> 00:08:19,740
and the basic inside of all those

204
00:08:24,320 --> 00:08:21,930
studies is that you basically have the

205
00:08:26,900 --> 00:08:24,330
independent variable happening after the

206
00:08:29,630 --> 00:08:26,910
dependent variable and so in his case

207
00:08:32,180 --> 00:08:29,640
there was a mere exposure happening

208
00:08:35,089 --> 00:08:32,190
after the people's judgments of the

209
00:08:38,000 --> 00:08:35,099
arousing quality of the effect and of

210
00:08:40,459 --> 00:08:38,010
the image but we did several variations

211
00:08:43,400 --> 00:08:40,469
on this one of them was temporarily

212
00:08:45,230 --> 00:08:43,410
reverse perceptual priming so there's

213
00:08:47,390 --> 00:08:45,240

been a lot of research which shows that

214

00:08:49,550 --> 00:08:47,400

if you view an image and then

215

00:08:52,000 --> 00:08:49,560

subsequently are flash the image very

216

00:08:55,220 --> 00:08:52,010

briefly that you can recognize the image

217

00:08:56,570 --> 00:08:55,230

more with a shorter interval if you'd

218

00:08:58,250 --> 00:08:56,580

seen it before there seems to be

219

00:09:00,350 --> 00:08:58,260

increased perceptual fluency to the

220

00:09:02,560 --> 00:09:00,360

image and as a result it takes less

221

00:09:04,610 --> 00:09:02,570

subsequent exposure to be able to

222

00:09:06,890 --> 00:09:04,620

identify it this is

223

00:09:08,300 --> 00:09:06,900

phenomena known as perceptual priming

224

00:09:10,460 --> 00:09:08,310

and so what we did is just to try to

225

00:09:12,350 --> 00:09:10,470

reverse the paradigm rather than showing

226

00:09:14,480 --> 00:09:12,360

people the image first and then having

227

00:09:16,430 --> 00:09:14,490

to make an identification from a briefly

228

00:09:17,270 --> 00:09:16,440

presented to see millisecond we did it

229

00:09:18,710 --> 00:09:17,280

the other way around

230

00:09:21,380 --> 00:09:18,720

we showed them the briefly presented

231

00:09:23,240 --> 00:09:21,390

stimulus first and asked them to make an

232

00:09:27,050 --> 00:09:23,250

identification and then subsequently

233

00:09:29,180 --> 00:09:27,060

either presented it again or not so the

234

00:09:32,300 --> 00:09:29,190

way the paradigm worked was as follows

235

00:09:33,650 --> 00:09:32,310

individuals viewed a fixation there was

236

00:09:35,150 --> 00:09:33,660

a noise mask I'll show you what that

237

00:09:37,670 --> 00:09:35,160

means in a moment then there was a

238

00:09:39,680 --> 00:09:37,680

briefly flashed image of the noise mask

239

00:09:42,170 --> 00:09:39,690

followed and they had indicate whether

240

00:09:43,610 --> 00:09:42,180

they knew what was presented and then

241

00:09:45,230 --> 00:09:43,620

the prime happened after they had

242

00:09:47,360 --> 00:09:45,240

already made the judgment either the

243

00:09:50,750 --> 00:09:47,370

image was repeated or was followed by a

244

00:09:53,510 --> 00:09:50,760

blank screen so there's the fixation

245

00:09:55,820 --> 00:09:53,520

point the noise mask was an image

246

00:09:57,680 --> 00:09:55,830

presented yes or no and then in this

247

00:09:59,180 --> 00:09:57,690

case an image is presented so that would

248

00:10:02,270 --> 00:09:59,190

be an example of a case in which there

249

00:10:05,900 --> 00:10:02,280

was a prime here's another case was an

250

00:10:08,690 --> 00:10:05,910

image presented yes or no and there's

251

00:10:11,630 --> 00:10:08,700

the blank screen so what we found is

252

00:10:15,380 --> 00:10:11,640

that when individuals have made the

253

00:10:17,750 --> 00:10:15,390

judgment and the image was followed by a

254

00:10:21,380 --> 00:10:17,760

prime they were significantly more

255

00:10:23,960 --> 00:10:21,390

likely to know say that they knew what

256

00:10:26,870 --> 00:10:23,970

the image was than if it was followed if

257

00:10:28,670 --> 00:10:26,880

it was not primed and we did this a

258

00:10:31,400 --> 00:10:28,680

number of different times we this is

259

00:10:34,240 --> 00:10:31,410

basically various different permutations

260

00:10:37,700 --> 00:10:34,250

on the basic paradigm we got the effect

261

00:10:40,310 --> 00:10:37,710

numerous times significantly but here's

262

00:10:43,010 --> 00:10:40,320

the decline effect which you can see is

263

00:10:45,830 --> 00:10:43,020

this is the magnitude of the prime

264

00:10:49,150 --> 00:10:45,840

effect and this is the experiment number

265

00:10:51,950 --> 00:10:49,160

and as you can see the effect size

266

00:10:53,960 --> 00:10:51,960

dwindled markedly with a subsequent

267

00:10:57,380 --> 00:10:53,970

experiments if you look at the overall

268

00:11:01,400 --> 00:10:57,390

linear effect that's here we get a

269

00:11:03,770 --> 00:11:01,410

p-value at the 0.0001 seven level of

270

00:11:06,650 --> 00:11:03,780

significance if you just cut it off here

271

00:11:08,180 --> 00:11:06,660

this is these are with smaller ends this

272

00:11:10,460 --> 00:11:08,190

is when we started running larger groups

273

00:11:12,940 --> 00:11:10,470

even when we just start from experiment

274

00:11:16,870 --> 00:11:12,950

seven to nineteen we still get a

275

00:11:18,889 --> 00:11:16,880

significant decline effect so we

276

00:11:20,989 --> 00:11:18,899

observed a very robust

277

00:11:24,049 --> 00:11:20,999

decline effect in this series of studies

278

00:11:26,239 --> 00:11:24,059

we ran over 2,000 participants that we

279

00:11:26,809 --> 00:11:26,249

really just hammered this experiment to

280

00:11:28,999 --> 00:11:26,819

the ground

281

00:11:34,489 --> 00:11:29,009

it really just washed it out completely

282

00:11:37,129 --> 00:11:34,499

eventually so the conclusions from this

283

00:11:39,559 --> 00:11:37,139

overall the effect remains significant

284

00:11:42,199 --> 00:11:39,569

but we observe this massive decline in

285

00:11:43,999 --> 00:11:42,209

significance the early studies may have

286

00:11:45,679 --> 00:11:44,009

had an advantage of smaller and and this

287

00:11:47,629 --> 00:11:45,689

is always a concern that you can have in

288

00:11:48,949 --> 00:11:47,639

these situations which it's when you

289

00:11:50,989 --> 00:11:48,959

have smaller and it's easier to get

290

00:11:53,269 --> 00:11:50,999

spurious results but even when we looked

291

00:11:55,129 --> 00:11:53,279

at the the later studies that had larger

292

00:11:58,309 --> 00:11:55,139

and we still get a significant decline

293

00:12:00,319 --> 00:11:58,319

effect so this is one compelling example

294

00:12:02,989 --> 00:12:00,329

I think of a decline effect in my own

295

00:12:05,090 --> 00:12:02,999

lab let me introduce you to a another

296

00:12:08,929 --> 00:12:05,100

paradigm this is a paradigm that was

297

00:12:11,629 --> 00:12:08,939

developed by my postdoc Michael Franklin

298

00:12:13,790 --> 00:12:11,639

who's been working in my lab for three

299

00:12:17,210 --> 00:12:13,800

years now I have to my hat goes off to

300

00:12:20,239 --> 00:12:17,220

him he got his PhD at University of

301

00:12:22,189 --> 00:12:20,249

Michigan and could have gotten a lots of

302

00:12:23,480 --> 00:12:22,199

really good mainstream postdocs that

303

00:12:26,329 --> 00:12:23,490

would not have threatened his career but

304

00:12:28,400 --> 00:12:26,339

rather was so committed to a pursuing

305

00:12:31,579 --> 00:12:28,410

SCI research that he came to join my lab

306

00:12:32,900 --> 00:12:31,589

and work on this paradigm I'm happy to

307

00:12:34,429 --> 00:12:32,910

also say that we've gotten i've also

308

00:12:36,189 --> 00:12:34,439

getting him doing mainstream research so

309

00:12:39,110 --> 00:12:36,199

i'm hoping that he's not necessarily

310

00:12:41,179 --> 00:12:39,120

destroyed his career by going in this

311

00:12:43,720 --> 00:12:41,189

direction but it is a real frustration

312

00:12:46,340 --> 00:12:43,730

of course that one has to really advise

313

00:12:48,139 --> 00:12:46,350

junior scientists against doing this

314

00:12:50,119 --> 00:12:48,149

kind of research because of the huge

315

00:12:52,009 --> 00:12:50,129

stigma that as you know is associated

316

00:12:53,780 --> 00:12:52,019

with this work so any of my hat goes off

317

00:12:56,049 --> 00:12:53,790

to him for having the guts to pursue

318

00:13:00,679 --> 00:12:56,059

this knowing the risks that he's taking

319

00:13:03,470 --> 00:13:00,689

so this paradigm is a retro causal

320

00:13:07,220 --> 00:13:03,480

practice paradigm so imagine that you

321

00:13:09,319 --> 00:13:07,230

gave individuals practice making a

322

00:13:13,489 --> 00:13:09,329

particular kind of perceptual

323

00:13:15,199 --> 00:13:13,499

identification and then you gave them

324

00:13:16,549 --> 00:13:15,209

two different perceptual identification

325

00:13:18,109 --> 00:13:16,559

tasks one with the items they had

326

00:13:19,069 --> 00:13:18,119

practiced with and know that they'd

327

00:13:21,739 --> 00:13:19,079

never seen before

328

00:13:23,869 --> 00:13:21,749

you'd be able to tell based on the

329

00:13:25,519 --> 00:13:23,879

performance at time to which ones they

330

00:13:26,929 --> 00:13:25,529

had practice with the time one because

331

00:13:30,769 --> 00:13:26,939

the performance should be different and

332

00:13:32,420 --> 00:13:30,779

so that's basically the the idea here

333

00:13:34,519 --> 00:13:32,430

except it's reversed

334

00:13:36,530 --> 00:13:34,529

in this case individuals make

335

00:13:39,079 --> 00:13:36,540

discriminations with two sets of stimuli

336

00:13:41,450 --> 00:13:39,089

initially and then subsequently they get

337

00:13:44,329 --> 00:13:41,460

additional practice with just one or the

338

00:13:49,880 --> 00:13:44,339

other set of stimuli the stimuli that he

339

00:13:52,880 --> 00:13:49,890

used are these nonverbal shapes and so

340

00:13:55,610 --> 00:13:52,890

people are basically asked to respond to

341

00:13:57,920 --> 00:13:55,620

either one kind of shape or another type

342

00:14:00,530 --> 00:13:57,930

of shape so it's a basic perceptual

343

00:14:02,720 --> 00:14:00,540

discrimination task and the pattern of

344

00:14:04,579 --> 00:14:02,730

results is a little bit quirky it's not

345

00:14:07,150 --> 00:14:04,589

just that practice with one with the

346

00:14:11,420 --> 00:14:07,160

shape that you've seen before leads to

347

00:14:14,870 --> 00:14:11,430

improve performance but rather what he

348

00:14:21,370 --> 00:14:14,880

found was a significant priming effect

349

00:14:26,930 --> 00:14:21,380

such that practice with shape a led to

350

00:14:29,210 --> 00:14:26,940

superior performance with shape a but it

351

00:14:32,000 --> 00:14:29,220

also practiced with a shape a also led

352

00:14:34,310 --> 00:14:32,010

to a superior performance with shape B

353

00:14:36,590 --> 00:14:34,320

so for some reason it's of the pattern

354

00:14:39,079 --> 00:14:36,600

of results is a little peculiar but the

355

00:14:42,110 --> 00:14:39,089

basic point is that he's finding is that

356

00:14:44,060 --> 00:14:42,120

practice at time two influenced

357

00:14:46,280 --> 00:14:44,070

performance at time one that's the

358

00:14:49,100 --> 00:14:46,290

take-home message that this paradigm

359

00:14:51,650 --> 00:14:49,110

revealed and he found that pattern in

360

00:14:54,620 --> 00:14:51,660

both the original study and a number of

361

00:14:58,130 --> 00:14:54,630

different replications now he presented

362

00:15:00,110 --> 00:14:58,140

this work at the the major Brown Bag at

363

00:15:01,730 --> 00:15:00,120

our department and people were sure

364

00:15:03,920 --> 00:15:01,740

there must be something about the random

365

00:15:05,480 --> 00:15:03,930

assignment that that maybe because the

366

00:15:07,040 --> 00:15:05,490

computer was doing the assignment even

367

00:15:09,590 --> 00:15:07,050

if it was using a random number

368

00:15:11,120 --> 00:15:09,600

generator that was based on physics

369

00:15:13,750 --> 00:15:11,130

property there must be a problem there

370

00:15:16,449 --> 00:15:13,760

and so what he did instead of using a

371

00:15:21,079 --> 00:15:16,459

random number generator based on the

372

00:15:26,180 --> 00:15:21,089

computer was instead to use a outcome of

373

00:15:27,470 --> 00:15:26,190

a off-site roulette wheel so if you

374

00:15:31,120 --> 00:15:27,480

think about this this is very promising

375

00:15:37,220 --> 00:15:31,130

so in phase one individuals are given

376

00:15:41,960 --> 00:15:37,230

practice with they work with both J pay

377

00:15:44,810 --> 00:15:41,970

and shape B okay and then at time two

378

00:15:46,310 --> 00:15:44,820

there is a roulette wheel spin which

379

00:15:48,440 --> 00:15:46,320

determines which shape the

380

00:15:51,110 --> 00:15:48,450

which set of shapes are going to get

381

00:15:53,330 --> 00:15:51,120

additional practice with and so if the

382

00:15:55,640 --> 00:15:53,340

ball lands on a red they get practice

383

00:15:58,010 --> 00:15:55,650

with shape a and if the ball lands on

384

00:16:00,920 --> 00:15:58,020

black they get practice with shape E now

385

00:16:02,570 --> 00:16:00,930

the nice thing about this is what this

386

00:16:04,700 --> 00:16:02,580

means is that you should be able to

387

00:16:06,950 --> 00:16:04,710

predict from their performance on phase

388

00:16:08,900 --> 00:16:06,960

one what the roulette wheel is going to

389

00:16:11,360 --> 00:16:08,910

spin to if it's going to if their

390

00:16:13,010 --> 00:16:11,370

performance suggests that there that

391

00:16:15,320 --> 00:16:13,020

there is more like that they are going

392

00:16:16,820 --> 00:16:15,330

to have practice with shape a then that

393

00:16:19,490 --> 00:16:16,830

means the roulette wheel is going to

394

00:16:20,780 --> 00:16:19,500

assign them based on red and if it looks

395

00:16:22,240 --> 00:16:20,790

more like B it suggests that the

396

00:16:24,800 --> 00:16:22,250

roulette wheel is going to be associated

397

00:16:27,130 --> 00:16:24,810

with black so the exciting thing about

398

00:16:31,160 --> 00:16:27,140

this paradigm basically is we are now

399

00:16:34,430 --> 00:16:31,170

predicting the outcome of a offsite

400

00:16:37,430 --> 00:16:34,440

roulette wheel now money speaks right so

401
00:16:39,890 --> 00:16:37,440
if this paradigm were to hold up we

402
00:16:42,080 --> 00:16:39,900
would need to get grant money right we

403
00:16:44,300 --> 00:16:42,090
could just make our money for the

404
00:16:46,220 --> 00:16:44,310
research of winning money off of a

405
00:16:50,660 --> 00:16:46,230
roulette wheel so this is a very

406
00:16:52,760 --> 00:16:50,670
exciting a procedure and obviously you

407
00:16:54,470 --> 00:16:52,770
know skeptics are gonna have a hard time

408
00:16:55,670 --> 00:16:54,480
going well yes I know you made millions

409
00:16:57,890 --> 00:16:55,680
of dollars but you know who was

410
00:17:00,710 --> 00:16:57,900
confounded right so clearly this is a

411
00:17:02,180 --> 00:17:00,720
very very compelling kind of paradigm

412
00:17:03,500 --> 00:17:02,190
for persuading people that there's

413
00:17:07,970 --> 00:17:03,510

really something there because money

414

00:17:10,010 --> 00:17:07,980

speaks um so the basic finding and this

415

00:17:13,100 --> 00:17:10,020

is what's basically happening is our

416

00:17:14,990 --> 00:17:13,110

ability to predict based on performance

417

00:17:17,300 --> 00:17:15,000

at time one whether or not the roulette

418

00:17:20,660 --> 00:17:17,310

wheel is going to assign people to one

419

00:17:22,310 --> 00:17:20,670

condition or the or the other and the

420

00:17:25,130 --> 00:17:22,320

refining x' with a hundred and fifty

421

00:17:26,660 --> 00:17:25,140

three participants the performance our

422

00:17:32,000 --> 00:17:26,670

ability to predict the spin of the

423

00:17:33,620 --> 00:17:32,010

roulette wheel was as 55 0.55

424

00:17:35,180 --> 00:17:33,630

we're chances point four eight six and

425

00:17:37,370 --> 00:17:35,190

the recent chance is not 50s because

426
00:17:40,340 --> 00:17:37,380
this is a gambling site and so there's a

427
00:17:42,580 --> 00:17:40,350
one green where you don't win so he's

428
00:17:45,320 --> 00:17:42,590
six point nine above chance which is

429
00:17:46,910 --> 00:17:45,330
significant point one Oh with the two

430
00:17:51,560 --> 00:17:46,920
tailed test

431
00:17:55,820 --> 00:17:51,570
so marginally significant importantly as

432
00:18:00,019 --> 00:17:55,830
you can see here the or them it's better

433
00:18:02,839 --> 00:18:00,029
to see it here this is the magnitude

434
00:18:04,519 --> 00:18:02,849
the effect over groups of ten subjects

435
00:18:06,739 --> 00:18:04,529
and basically what we got

436
00:18:09,669 --> 00:18:06,749
was very significant in the first

437
00:18:11,989 --> 00:18:09,679
quartile and then less significant

438
00:18:15,589 --> 00:18:11,999

subsequently and if you look at the

439

00:18:20,359 --> 00:18:15,599

overall decline effect its are negative

440

00:18:23,320 --> 00:18:20,369

0.45 P equals 0.5 so at the moment this

441

00:18:25,039 --> 00:18:23,330

effect seems to also have decline now

442

00:18:27,169 --> 00:18:25,049

Michael and I have somewhat different

443

00:18:30,229 --> 00:18:27,179

perspectives on this he's hoping that

444

00:18:32,329 --> 00:18:30,239

the effect this is just a lag and that

445

00:18:35,060 --> 00:18:32,339

it'll come back and I'm seeing this more

446

00:18:36,799 --> 00:18:35,070

as there's the decline effect again but

447

00:18:38,469 --> 00:18:36,809

there seems to be a number of things

448

00:18:40,909 --> 00:18:38,479

that we can conclude from this

449

00:18:42,829 --> 00:18:40,919

experiment the first is that overall

450

00:18:44,269 --> 00:18:42,839

effective Retro causal effect practice

451
00:18:45,709 --> 00:18:44,279
remains significant it's important to

452
00:18:49,639 --> 00:18:45,719
keep in mind that this is just one of a

453
00:18:51,289 --> 00:18:49,649
whole series of over 900 participants

454
00:18:53,329 --> 00:18:51,299
that Michael's run in this paradigm and

455
00:18:56,779 --> 00:18:53,339
overall we still have a significant

456
00:18:59,359 --> 00:18:56,789
retro causal practice effect secondly

457
00:19:00,529 --> 00:18:59,369
this is a really elegant paradigm and I

458
00:19:02,389 --> 00:19:00,539
would encourage people to think about

459
00:19:07,430 --> 00:19:02,399
developing their paradigms in this way

460
00:19:09,169 --> 00:19:07,440
in that it the obvious significance of

461
00:19:11,959 --> 00:19:09,179
such a finding if you can find a finding

462
00:19:13,639 --> 00:19:11,969
that can you know make money then that's

463
00:19:14,329 --> 00:19:13,649

really going to persuade skeptics in a

464

00:19:16,879 --> 00:19:14,339

way then that

465

00:19:18,950 --> 00:19:16,889

little else could and then finally

466

00:19:22,219 --> 00:19:18,960

relevant to the current discussion here

467

00:19:24,769 --> 00:19:22,229

the decline effect observed was

468

00:19:29,329 --> 00:19:24,779

significant so again we are seeing this

469

00:19:31,369 --> 00:19:29,339

haunting decline effect all right so um

470

00:19:34,579 --> 00:19:31,379

it turns out that decline effects are

471

00:19:36,349 --> 00:19:34,589

not just limited no sorry before I get

472

00:19:38,979 --> 00:19:36,359

into that the client in fact is been

473

00:19:42,169 --> 00:19:38,989

shown up in a number of meta analyses of

474

00:19:44,119 --> 00:19:42,179

in various areas of SCI research so this

475

00:19:46,269 --> 00:19:44,129

is a meta-analysis reported by dick

476

00:19:49,489 --> 00:19:46,279

Biermann in 2001 on dice throwing

477

00:19:53,029 --> 00:19:49,499

showing a significant decline in

478

00:19:55,310 --> 00:19:53,039

people's ability to get dice to produce

479

00:19:59,299 --> 00:19:55,320

the outcomes that they were trying to

480

00:20:02,299 --> 00:19:59,309

get here is a similar decline effect in

481

00:20:03,529 --> 00:20:02,309

the ganzfeld procedure presumably

482

00:20:06,829 --> 00:20:03,539

everyone here knows the gone sale

483

00:20:09,469 --> 00:20:06,839

procedure is basically a remote it's

484

00:20:11,810 --> 00:20:09,479

it's a telepathy procedure where

485

00:20:13,730 --> 00:20:11,820

individuals are able to imagine know

486

00:20:16,910 --> 00:20:13,740

what the sender is

487

00:20:18,500 --> 00:20:16,920

sending with half ping-pong balls over

488

00:20:22,240 --> 00:20:18,510

their eyes to get sort of a better sense

489

00:20:24,770 --> 00:20:22,250

of the image that's being sent again a

490

00:20:27,290 --> 00:20:24,780

significant decline effect but

491

00:20:29,630 --> 00:20:27,300

interestingly there seems to be what may

492

00:20:31,340 --> 00:20:29,640

be a decline so here they've

493

00:20:33,020 --> 00:20:31,350

demonstrated a Cline effect and this

494

00:20:34,880 --> 00:20:33,030

race is this really interesting thing if

495

00:20:37,700 --> 00:20:34,890

you demonstrate empirically the decline

496

00:20:39,410 --> 00:20:37,710

effect does that replicate well it turns

497

00:20:44,140 --> 00:20:39,420

out that it seems that even the decline

498

00:20:50,110 --> 00:20:44,150

effect is subject to the decline effect

499

00:20:53,090 --> 00:20:50,120

so here is a recent here is a recent

500

00:20:54,590 --> 00:20:53,100

meta-analysis by a store minal and you

501
00:20:56,030 --> 00:20:54,600
can see right here the sort of the peak

502
00:20:57,919 --> 00:20:56,040
of the client effect is right you know

503
00:20:59,570 --> 00:20:57,929
in this Biermann meta-analysis and now

504
00:21:02,000 --> 00:20:59,580
it comes back so the evening things out

505
00:21:03,770 --> 00:21:02,010
so it may be my sort of secret hope here

506
00:21:05,840 --> 00:21:03,780
is that by really going after the

507
00:21:09,590 --> 00:21:05,850
decline effect I can get rid of it once

508
00:21:11,620 --> 00:21:09,600
and for all and by the way this is not

509
00:21:14,419 --> 00:21:11,630
the only place where this you get this

510
00:21:17,630 --> 00:21:14,429
decline in return it's also been found

511
00:21:19,660 --> 00:21:17,640
in the RNG paradigm again you see this

512
00:21:21,799 --> 00:21:19,670
decline effect and then a return

513
00:21:23,960 --> 00:21:21,809

oftentimes the return is not quite as

514

00:21:26,090 --> 00:21:23,970

strong as it never seems to quite get

515

00:21:28,220 --> 00:21:26,100

back to its original place but there

516

00:21:31,280 --> 00:21:28,230

does seem to be this peculiar decline in

517

00:21:33,140 --> 00:21:31,290

the decline effect all right

518

00:21:34,430 --> 00:21:33,150

so conclusions the meta-analysis of psy

519

00:21:37,010 --> 00:21:34,440

research the client effect is observed

520

00:21:38,690 --> 00:21:37,020

in a number of domains after decline a

521

00:21:41,240 --> 00:21:38,700

return is observed in the longest

522

00:21:43,430 --> 00:21:41,250

studied domains and could this plausibly

523

00:21:45,950 --> 00:21:43,440

could be a decline in the decline effect

524

00:21:48,200 --> 00:21:45,960

now turns out that this is not as

525

00:21:49,940 --> 00:21:48,210

already anticipated by my discussions of

526

00:21:52,250 --> 00:21:49,950

my own research the only place where

527

00:21:55,760 --> 00:21:52,260

decline effects have been observed they

528

00:21:57,490 --> 00:21:55,770

have also been observed in a number of

529

00:21:59,600 --> 00:21:57,500

different domains this is a

530

00:22:00,380 --> 00:21:59,610

meta-analysis of drug treatments of

531

00:22:03,380 --> 00:22:00,390

schizophrenia

532

00:22:05,450 --> 00:22:03,390

actually my mother oddly enough was an

533

00:22:07,460 --> 00:22:05,460

author on this meta-analysis and I I

534

00:22:09,169 --> 00:22:07,470

just was at the house one day and I saw

535

00:22:10,940 --> 00:22:09,179

this you know why did drug effects

536

00:22:13,070 --> 00:22:10,950

decline I was like oh my god it's there

537

00:22:15,620 --> 00:22:13,080

too and so they have this really

538

00:22:18,020 --> 00:22:15,630

powerful the client affected 0.55 in

539

00:22:20,240 --> 00:22:18,030

this many of you may know that there was

540

00:22:21,890 --> 00:22:20,250

an article that was described in by

541

00:22:23,690 --> 00:22:21,900

Jonah Lehrer or article written by Jonah

542

00:22:26,600 --> 00:22:23,700

Lehrer in The New Yorker that got a lot

543

00:22:27,680 --> 00:22:26,610

of press I got a lot of emails as a

544

00:22:30,470 --> 00:22:27,690

result of that

545

00:22:32,930 --> 00:22:30,480

one of the emails I got was from Robert

546

00:22:35,330 --> 00:22:32,940

Kaplan who is notably

547

00:22:37,010 --> 00:22:35,340

now the aimh Associate Director for

548

00:22:39,650 --> 00:22:37,020

behavioral and social sciences so a

549

00:22:42,800 --> 00:22:39,660

major player in mainstream science and

550

00:22:46,010 --> 00:22:42,810

he sent me several meta analyses

551
00:22:48,140 --> 00:22:46,020
demonstrating decline effects in a

552
00:22:50,150 --> 00:22:48,150
variety of different drug research

553
00:22:54,860 --> 00:22:50,160
domains including previs 10 which is a

554
00:23:01,100 --> 00:22:54,870
treatment for cholesterol timolol which

555
00:23:02,510 --> 00:23:01,110
is a beta blocker and also got Latin

556
00:23:05,510 --> 00:23:02,520
approach which is a treatment of

557
00:23:07,070 --> 00:23:05,520
glaucoma I'm delighted to say that dr.

558
00:23:09,770 --> 00:23:07,080
Kaplan is working on getting an

559
00:23:11,750 --> 00:23:09,780
invitation for me to speak at the NIH so

560
00:23:13,460 --> 00:23:11,760
there is this hope that the decline

561
00:23:15,290 --> 00:23:13,470
effect may be sort of an entry point for

562
00:23:18,200 --> 00:23:15,300
getting a finding that was originally

563
00:23:20,030 --> 00:23:18,210

discovered in parapsychology really into

564

00:23:22,310 --> 00:23:20,040

the mainstream this decline effect has

565

00:23:25,190 --> 00:23:22,320

also been reported in men analyses in

566

00:23:27,890 --> 00:23:25,200

biology there's a meta-analysis by Jenny

567

00:23:29,150 --> 00:23:27,900

ins and Moeller and they say in which

568

00:23:30,890 --> 00:23:29,160

they found there was a small but

569

00:23:32,900 --> 00:23:30,900

significant decline effect in size with

570

00:23:34,280 --> 00:23:32,910

your publication and the effect of your

571

00:23:36,470 --> 00:23:34,290

publication remained even after we

572

00:23:38,720 --> 00:23:36,480

controlled for sampling effort similar

573

00:23:40,760 --> 00:23:38,730

to my study where we had smaller and at

574

00:23:43,700 --> 00:23:40,770

first and larger later on same thing as

575

00:23:45,940 --> 00:23:43,710

observed in this case and these are just

576

00:23:48,500 --> 00:23:45,950

the numbers that bear that out

577

00:23:50,270 --> 00:23:48,510

so are the conclusions from the decline

578

00:23:51,590 --> 00:23:50,280

effect in mainstream science there's

579

00:23:52,730 --> 00:23:51,600

been declining effects observed in a

580

00:23:54,290 --> 00:23:52,740

variety of means including any

581

00:23:56,090 --> 00:23:54,300

psychotics cholesterol-lowering drugs

582

00:23:57,830 --> 00:23:56,100

beta blockers treatment of glaucoma and

583

00:24:01,240 --> 00:23:57,840

in a variety of different domains of

584

00:24:03,830 --> 00:24:01,250

biology this is not just limited to a

585

00:24:05,930 --> 00:24:03,840

research although clearly there's some

586

00:24:07,640 --> 00:24:05,940

constraints here I mean balls when you

587

00:24:10,040 --> 00:24:07,650

drop them they fall in exactly the same

588

00:24:12,790 --> 00:24:10,050

rate every time so there's a lot that we

589

00:24:14,990 --> 00:24:12,800

don't understand about what the specific

590

00:24:16,660 --> 00:24:15,000

parameters are for where decline effects

591

00:24:20,330 --> 00:24:16,670

are observed and where they're not

592

00:24:21,830 --> 00:24:20,340

alright now let me take a breath step

593

00:24:23,570 --> 00:24:21,840

back for a moment and talk about

594

00:24:26,540 --> 00:24:23,580

possible accounts of the client effect

595

00:24:28,390 --> 00:24:26,550

it's really critical to emphasize that

596

00:24:30,560 --> 00:24:28,400

there are a number of very compelling

597

00:24:32,600 --> 00:24:30,570

conventional accounts of decline effects

598

00:24:34,400 --> 00:24:32,610

and you know before we get all carried

599

00:24:36,680 --> 00:24:34,410

away with the side kinds of accounts

600

00:24:38,630 --> 00:24:36,690

it's really very careful to acknowledge

601
00:24:40,490 --> 00:24:38,640
conventional accounts think about them

602
00:24:41,510 --> 00:24:40,500
carefully and consider to what degree

603
00:24:44,090 --> 00:24:41,520
they may be playing

604
00:24:47,240 --> 00:24:44,100
the first one most obviously is

605
00:24:48,740 --> 00:24:47,250
regression to the mean that is every now

606
00:24:50,570 --> 00:24:48,750
and then when you run or when you run

607
00:24:52,640 --> 00:24:50,580
study sometimes you're going to get the

608
00:24:53,840 --> 00:24:52,650
actual variance associated with the

609
00:24:55,370 --> 00:24:53,850
manipulation and there's also going to

610
00:24:57,140 --> 00:24:55,380
be noise variance and when the noise

611
00:24:59,540 --> 00:24:57,150
variance goes in the same direction as

612
00:25:01,160 --> 00:24:59,550
the actual variance that you're looking

613
00:25:05,150 --> 00:25:01,170

for that's going to lead to a distortion

614

00:25:07,580 --> 00:25:05,160

a distorted estimate of the effect size

615

00:25:10,160 --> 00:25:07,590

and so it may be that if you get lucky

616

00:25:12,260 --> 00:25:10,170

and get this distortion that that's

617

00:25:14,510 --> 00:25:12,270

going to lead you to overestimate the

618

00:25:16,549 --> 00:25:14,520

effect size initially it's a very

619

00:25:19,030 --> 00:25:16,559

compelling explanation one thing it

620

00:25:21,410 --> 00:25:19,040

doesn't really explain is why the

621

00:25:22,850 --> 00:25:21,420

decline effect tends to have this linear

622

00:25:24,530 --> 00:25:22,860

pattern regression to the mean would

623

00:25:26,419 --> 00:25:24,540

predict that you should get a big effect

624

00:25:28,490 --> 00:25:26,429

and then it should just vary around the

625

00:25:29,240 --> 00:25:28,500

mean thereafter so that's the problem

626

00:25:31,430 --> 00:25:29,250

with that one

627

00:25:33,560 --> 00:25:31,440

definitely can account for some findings

628

00:25:35,240 --> 00:25:33,570

but not necessarily all of them another

629

00:25:37,700 --> 00:25:35,250

one I think this is a very very elegant

630

00:25:39,410 --> 00:25:37,710

explanation it was suggested to me by my

631

00:25:41,630 --> 00:25:39,420

colleague dance Millikin University of

632

00:25:43,130 --> 00:25:41,640

Waterloo it may be that when we first

633

00:25:45,169 --> 00:25:43,140

when we run studies there are a number

634

00:25:47,150 --> 00:25:45,179

of aspects to the paradigm that we have

635

00:25:48,410 --> 00:25:47,160

made explicit that we know are important

636

00:25:50,210 --> 00:25:48,420

but there are other aspects of the

637

00:25:52,130 --> 00:25:50,220

paradigm that may be important but we

638

00:25:54,230 --> 00:25:52,140

haven't recognized them as such so when

639

00:25:55,549 --> 00:25:54,240

we replicate the experiment we always

640

00:25:56,960 --> 00:25:55,559

make sure to do the parts that we know

641

00:25:58,549 --> 00:25:56,970

are important but they're all these

642

00:26:00,350 --> 00:25:58,559

other parts that what we thought are

643

00:26:02,210 --> 00:26:00,360

superfluous that actually turn out to be

644

00:26:04,430 --> 00:26:02,220

critical because we don't recognizing

645

00:26:06,799 --> 00:26:04,440

recognized them as being critical as we

646

00:26:08,510 --> 00:26:06,809

replicate they gradually become less

647

00:26:10,430 --> 00:26:08,520

included and so the effect size

648

00:26:12,080 --> 00:26:10,440

dissipates because we're not recognizing

649

00:26:13,820 --> 00:26:12,090

some of the critical variables this

650

00:26:16,190 --> 00:26:13,830

makes a lot of sense but erases the

651
00:26:18,020 --> 00:26:16,200
question why do we get so lucky and get

652
00:26:18,770 --> 00:26:18,030
it all right at first and then go in the

653
00:26:20,540 --> 00:26:18,780
wrong direction

654
00:26:22,549 --> 00:26:20,550
shouldn't it also happen that you know

655
00:26:25,010 --> 00:26:22,559
we get it wrong at first and then get

656
00:26:27,200 --> 00:26:25,020
better as time goes on so it makes sense

657
00:26:28,720 --> 00:26:27,210
but it's this has a sort of peculiar

658
00:26:31,370 --> 00:26:28,730
reliance on luck

659
00:26:32,600 --> 00:26:31,380
another possibility is just that we

660
00:26:35,570 --> 00:26:32,610
refine the procedure that there

661
00:26:38,360 --> 00:26:35,580
confounds in the procedures initially

662
00:26:40,040 --> 00:26:38,370
but that then as we refine those

663
00:26:41,540 --> 00:26:40,050

procedures we get rid of the confounds

664

00:26:43,040 --> 00:26:41,550

and that makes the effect go away well

665

00:26:45,080 --> 00:26:43,050

that makes sense but shouldn't we also

666

00:26:46,820 --> 00:26:45,090

be refining procedures and get stronger

667

00:26:47,990 --> 00:26:46,830

yeah we should understand the phenomena

668

00:26:50,060 --> 00:26:48,000

better and actually be able to get the

669

00:26:51,980 --> 00:26:50,070

effects better so this makes sense but

670

00:26:55,280 --> 00:26:51,990

it's a little bit confusing as to why it

671

00:26:57,680 --> 00:26:55,290

would only go in one direction and

672

00:26:59,630 --> 00:26:57,690

lastly the possibility publication bias

673

00:27:00,980 --> 00:26:59,640

that um initially the only way you can

674

00:27:02,780 --> 00:27:00,990

get something published is if you get a

675

00:27:04,640 --> 00:27:02,790

large effect and if it's very sort of

676
00:27:06,260 --> 00:27:04,650
straightforward but then as people are

677
00:27:08,240 --> 00:27:06,270
attempting to replicate it or looking at

678
00:27:10,010 --> 00:27:08,250
various different parameters there may

679
00:27:12,170 --> 00:27:10,020
not be the same onus to have to get such

680
00:27:13,430 --> 00:27:12,180
a large effect size this also makes a

681
00:27:14,960 --> 00:27:13,440
lot of sense this this has been the

682
00:27:17,210 --> 00:27:14,970
explanation that Virginians

683
00:27:19,430 --> 00:27:17,220
and colleagues suggested but it doesn't

684
00:27:20,840 --> 00:27:19,440
explain my own experience I didn't

685
00:27:22,760 --> 00:27:20,850
there's no publication bias to produce

686
00:27:25,610 --> 00:27:22,770
that you know linear decline in the

687
00:27:27,410 --> 00:27:25,620
however many fifteen precognition cities

688
00:27:29,990 --> 00:27:27,420

so so that alone doesn't explain at all

689

00:27:31,640 --> 00:27:30,000

now it's possible and I would have to

690

00:27:34,370 --> 00:27:31,650

say you know when I put it on my

691

00:27:37,280 --> 00:27:34,380

traditional I don't have to save it the

692

00:27:39,080 --> 00:27:37,290

most parsimonious explanation is it some

693

00:27:40,760 --> 00:27:39,090

combination of all of these that that

694

00:27:41,930 --> 00:27:40,770

any one of these alone doesn't do it but

695

00:27:44,630 --> 00:27:41,940

when you combine them all in just the

696

00:27:46,520 --> 00:27:44,640

right way that's sufficient to account

697

00:27:48,110 --> 00:27:46,530

for the client effect and I think that

698

00:27:51,020 --> 00:27:48,120

is the explanation that needs to be beat

699

00:27:53,030 --> 00:27:51,030

that said I also think and I've talked

700

00:27:54,980 --> 00:27:53,040

about this I've stuck my neck out and

701
00:27:57,290 --> 00:27:54,990
talked about this you know publicly and

702
00:27:59,600 --> 00:27:57,300
even in an article in nature and in my

703
00:28:02,840 --> 00:27:59,610
interview with Jonah Lehrer I think it's

704
00:28:04,970 --> 00:28:02,850
also appropriate to consider if not to

705
00:28:06,860 --> 00:28:04,980
subscribe yet to subscribe to some

706
00:28:09,410 --> 00:28:06,870
non-conventional accounts of the decline

707
00:28:11,120 --> 00:28:09,420
effect and so here I'm going to sort of

708
00:28:13,190 --> 00:28:11,130
let my hair down a little bit and talk

709
00:28:14,780 --> 00:28:13,200
about what might be some things going on

710
00:28:18,830 --> 00:28:14,790
here again I want to emphasize that I

711
00:28:21,020 --> 00:28:18,840
see these is incredibly speculative one

712
00:28:23,870 --> 00:28:21,030
possibility is that there's some sort of

713
00:28:26,960 --> 00:28:23,880

Heisenberg in process going on here that

714

00:28:30,410 --> 00:28:26,970

somehow be in the process of observation

715

00:28:32,210 --> 00:28:30,420

of scientific phenomena we changed the

716

00:28:34,220 --> 00:28:32,220

phenomena so it's typically the way

717

00:28:36,490 --> 00:28:34,230

Heisenberg and the Copenhagen account

718

00:28:39,620 --> 00:28:36,500

goes and mind you this is no longer the

719

00:28:42,350 --> 00:28:39,630

mostly accepted version the act of

720

00:28:46,850 --> 00:28:42,360

observation changes at the local level

721

00:28:48,770 --> 00:28:46,860

the particular way in which it collapses

722

00:28:49,970 --> 00:28:48,780

the probability cloud and influences the

723

00:28:53,540 --> 00:28:49,980

particular manner in which say an

724

00:28:55,520 --> 00:28:53,550

electron is located here the idea is

725

00:28:57,320 --> 00:28:55,530

that it's not influencing the specific

726

00:28:58,430 --> 00:28:57,330

location of a particular event or

727

00:29:01,220 --> 00:28:58,440

occurrence of a particular event but

728

00:29:04,580 --> 00:29:01,230

rather the nature of the rules of

729

00:29:06,830 --> 00:29:04,590

science more generally so this sort of

730

00:29:08,840 --> 00:29:06,840

assumes it challenges what is an

731

00:29:10,670 --> 00:29:08,850

absolutely fundamental premise

732

00:29:11,900 --> 00:29:10,680

of a current science which is that the

733

00:29:14,090 --> 00:29:11,910

laws of nature whatever they are

734

00:29:16,550 --> 00:29:14,100

discovered or undiscovered or immutable

735

00:29:18,680 --> 00:29:16,560

and this basically says no the process

736

00:29:22,460 --> 00:29:18,690

of observation may actually change the

737

00:29:24,050 --> 00:29:22,470

principles of science now this is very

738

00:29:25,640 --> 00:29:24,060

radical but it's also important to

739

00:29:28,630 --> 00:29:25,650

emphasize that I'm not the only one who

740

00:29:31,040 --> 00:29:28,640

suggested this physicists have also

741

00:29:33,500 --> 00:29:31,050

acknowledged that the premise that the

742

00:29:36,050 --> 00:29:33,510

laws of reality are immutable is an

743

00:29:38,980 --> 00:29:36,060

assumption and cannot be taken as you

744

00:29:41,930 --> 00:29:38,990

necessarily dogma

745

00:29:43,820 --> 00:29:41,940

so some possible things that might

746

00:29:46,490 --> 00:29:43,830

contribute to this way in which the

747

00:29:48,140 --> 00:29:46,500

active observation has its effect one

748

00:29:53,120 --> 00:29:48,150

possibility is something that I refer to

749

00:29:55,100 --> 00:29:53,130

as cosmic a bitumen you first study

750

00:29:56,600 --> 00:29:55,110

something in a novel way it's entirely

751
00:30:02,480 --> 00:29:56,610
novel it's never been observed before

752
00:30:04,310 --> 00:30:02,490
and so it's novelty is as we know you

753
00:30:05,390 --> 00:30:04,320
know conscious and one of the critical

754
00:30:06,830 --> 00:30:05,400
aspects of consciousness is very

755
00:30:09,140 --> 00:30:06,840
sensitive to novel things when I first

756
00:30:11,120 --> 00:30:09,150
put my finger on my arm I feel it after

757
00:30:12,800 --> 00:30:11,130
a while it obituaries in some manner

758
00:30:14,450 --> 00:30:12,810
there may be some kind of habituation is

759
00:30:15,980 --> 00:30:14,460
happening perhaps in some sort of

760
00:30:18,200 --> 00:30:15,990
collective consciousness when

761
00:30:21,590 --> 00:30:18,210
individuals making an observation at

762
00:30:23,630 --> 00:30:21,600
first it is novel to reality and then as

763
00:30:24,860 --> 00:30:23,640

it becomes repeated it becomes less and

764

00:30:27,560 --> 00:30:24,870

less novel as some sort of future

765

00:30:28,880 --> 00:30:27,570

situation in some sense this is sort of

766

00:30:30,770 --> 00:30:28,890

the opposite of morphic resonance

767

00:30:32,150 --> 00:30:30,780

morphic resonance is the idea that once

768

00:30:34,040 --> 00:30:32,160

you put something out there it expands

769

00:30:38,240 --> 00:30:34,050

here the notion is that when you put

770

00:30:39,800 --> 00:30:38,250

something out there it declines when

771

00:30:42,080 --> 00:30:39,810

I first mentioned this to Rupert

772

00:30:44,210 --> 00:30:42,090

Sheldrake he was rather skeptical about

773

00:30:45,410 --> 00:30:44,220

it but after the New Yorker he contacted

774

00:30:47,690 --> 00:30:45,420

me and said that in fact he'd been

775

00:30:49,640 --> 00:30:47,700

experiencing decline effects a number of

776

00:30:51,350 --> 00:30:49,650

his paradigms as well so he's become a

777

00:30:52,490 --> 00:30:51,360

little bit more open to the possibility

778

00:30:54,080 --> 00:30:52,500

that there could be a flip side to

779

00:30:55,790 --> 00:30:54,090

morphic resonance which would be

780

00:30:59,330 --> 00:30:55,800

something along the lines of cosmic

781

00:31:00,680 --> 00:30:59,340

capitulum ffice ice that this these are

782

00:31:03,410 --> 00:31:00,690

not explanations these are just sort of

783

00:31:04,880 --> 00:31:03,420

like possible things that this decline

784

00:31:09,170 --> 00:31:04,890

effect reminds me of this almost

785

00:31:11,480 --> 00:31:09,180

metaphorical is a imagine that you have

786

00:31:14,060 --> 00:31:11,490

a telescope and you pointed at a distant

787

00:31:15,470 --> 00:31:14,070

object and it's not in focus initially

788

00:31:17,450 --> 00:31:15,480

that distant object is going to be

789

00:31:19,610 --> 00:31:17,460

blurry and when it's blurry it's going

790

00:31:22,040 --> 00:31:19,620

to include more visual angle it's going

791

00:31:22,580 --> 00:31:22,050

to be larger as you bring it into focus

792

00:31:24,830 --> 00:31:22,590

and relax

793

00:31:27,049 --> 00:31:24,840

get smaller right it'll be sharper but

794

00:31:28,820 --> 00:31:27,059

smaller it may be that when we do

795

00:31:32,390 --> 00:31:28,830

scientific research it's kind of the

796

00:31:34,130 --> 00:31:32,400

equivalent of printing the metaphorical

797

00:31:36,169 --> 00:31:34,140

telescope at the phenomena when you

798

00:31:38,870 --> 00:31:36,179

first look at it the phenomena is sort

799

00:31:40,190 --> 00:31:38,880

of more fuzzy and distributed but then

800

00:31:42,950 --> 00:31:40,200

as you do more research

801

00:31:44,720 --> 00:31:42,960

it becomes more narrow which means that

802

00:31:46,850 --> 00:31:44,730

areas that used to be occluded or that

803

00:31:48,320 --> 00:31:46,860

the object is no longer there and so it

804

00:31:50,299 --> 00:31:48,330

may be that there is some sort of way in

805

00:31:52,940 --> 00:31:50,309

which the act of observation by becoming

806

00:31:55,370 --> 00:31:52,950

more precise actually areas that where

807

00:31:57,049 --> 00:31:55,380

the effect was once it's no longer there

808

00:31:58,610 --> 00:31:57,059

this also suggests that if you really

809

00:32:00,740 --> 00:31:58,620

get the bull's eye

810

00:32:02,480 --> 00:32:00,750

that it'll be there even in spades so

811

00:32:03,950 --> 00:32:02,490

there it sort of gives hope that it that

812

00:32:06,019 --> 00:32:03,960

it's just a matter of getting it exactly

813

00:32:07,490 --> 00:32:06,029

right but the idea is that typically

814

00:32:09,649 --> 00:32:07,500

when we're you know we're sort of

815

00:32:11,899 --> 00:32:09,659

throwing darts at things we're just

816

00:32:14,240 --> 00:32:11,909

getting right on the periphery and not

817

00:32:19,580 --> 00:32:14,250

really narrowing it down to its absolute

818

00:32:21,200 --> 00:32:19,590

fundamental locus and then the third

819

00:32:23,480 --> 00:32:21,210

thing and this is again not even really

820

00:32:25,460 --> 00:32:23,490

an explanation but it's just sort of an

821

00:32:27,620 --> 00:32:25,470

intuition about what's going on here is

822

00:32:29,330 --> 00:32:27,630

that beginner's luck there may be

823

00:32:31,580 --> 00:32:29,340

something about this notion of

824

00:32:35,480 --> 00:32:31,590

beginner's luck that somehow intrinsic

825

00:32:38,450 --> 00:32:35,490

in the way that reality is is is

826

00:32:41,210 --> 00:32:38,460

structured that when we do things the

827

00:32:43,370 --> 00:32:41,220

first time they are they afford a

828

00:32:46,220 --> 00:32:43,380

greater opportunity than later on who

829

00:32:48,200 --> 00:32:46,230

knows why that would be but it just

830

00:32:49,730 --> 00:32:48,210

seems possible that beginner's luck is

831

00:32:52,700 --> 00:32:49,740

an intrinsic aspect of reality that

832

00:32:55,279 --> 00:32:52,710

certainly is the claim that Kolo made in

833

00:32:58,940 --> 00:32:55,289

the opening quote so in terms of future

834

00:33:01,220 --> 00:32:58,950

directions first it suggests that novel

835

00:33:03,230 --> 00:33:01,230

paradigms should do better than ones

836

00:33:04,970 --> 00:33:03,240

that are strict replications and

837

00:33:06,380 --> 00:33:04,980

secondly I don't really have time to go

838

00:33:07,850 --> 00:33:06,390

into this one of the things that I've

839

00:33:10,519 --> 00:33:07,860

really been pushing hard for us we need

840

00:33:12,380 --> 00:33:10,529

to have an open source data repository

841

00:33:13,940 --> 00:33:12,390

where people log their experiments ahead

842

00:33:17,360 --> 00:33:13,950

of time and report the outcome

843

00:33:20,480 --> 00:33:17,370

regardless of results afterwards the

844

00:33:23,149 --> 00:33:20,490

problem in the current system is that we

845

00:33:25,220 --> 00:33:23,159

don't know how to fit the positive

846

00:33:26,419 --> 00:33:25,230

results with respect to all the larger

847

00:33:28,720 --> 00:33:26,429

negative results that are out there and

848

00:33:31,370 --> 00:33:28,730

are not being reported we need to

849

00:33:33,889 --> 00:33:31,380

scientists need to be required to make

850

00:33:35,779 --> 00:33:33,899

all of their research available and not

851

00:33:38,690 --> 00:33:35,789

just that which they've able in

852

00:33:40,909 --> 00:33:38,700

able to spin for acceptance into the

853

00:33:43,279 --> 00:33:40,919

scientific record it's only by knowing

854

00:33:45,950 --> 00:33:43,289

the full set of data that we'll be able

855

00:33:47,389 --> 00:33:45,960

to understand how the positive results

856

00:33:50,239 --> 00:33:47,399

that we get relate to the negative

857

00:33:52,690 --> 00:33:50,249

results that may also be out there so my

858

00:33:55,129 --> 00:33:52,700

final thoughts are two the first is it's

859

00:33:56,419 --> 00:33:55,139

ironically it may be that the domain of

860

00:33:58,249 --> 00:33:56,429

investigation that has been most

861

00:34:00,590 --> 00:33:58,259

frequently accused of a lack of rigor

862

00:34:02,299 --> 00:34:00,600

SCI research will be the impetus for

863

00:34:04,549 --> 00:34:02,309

reining in the sloppy practices of

864

00:34:08,770 --> 00:34:04,559

science as a whole and I think this is I

865

00:34:11,930 --> 00:34:08,780

think this is really a possibility and

866

00:34:14,960 --> 00:34:11,940

secondly I suspect that the best

867

00:34:17,299 --> 00:34:14,970

evidence for SCI may not be found at the

868

00:34:19,250 --> 00:34:17,309

individuals experimental level but

869

00:34:21,530 --> 00:34:19,260

rather at the meta level that when we

870

00:34:23,210 --> 00:34:21,540

set up this giant repository we will

871

00:34:25,129 --> 00:34:23,220

then be able to actually see these

872

00:34:27,109 --> 00:34:25,139

anomalies and they won't be able to be

873

00:34:29,000 --> 00:34:27,119

dismissed so it really may be the meta

874

00:34:30,740 --> 00:34:29,010

level where we're really gonna find the

875

00:34:41,359 --> 00:34:30,750

best evidence for SCI thank you very

876

00:34:46,760 --> 00:34:41,369

much I think you're gonna get a long

877

00:34:49,039 --> 00:34:46,770

line here I've done healing research for

878

00:34:51,109 --> 00:34:49,049

a number of decades now and I offer

879

00:34:53,329 --> 00:34:51,119

badly from a lack of a decline effect

880

00:34:54,889 --> 00:34:53,339

and this has bugged me I mean quite

881

00:34:56,569 --> 00:34:54,899

frankly it sounds silly but it's

882

00:34:59,960 --> 00:34:56,579

actually bugged me so at this point I've

883

00:35:02,000 --> 00:34:59,970

done 12 mice experiments on cancer that

884

00:35:04,609 --> 00:35:02,010

has 100% fatality and I don't have any

885

00:35:05,660 --> 00:35:04,619

decline effect at all in the beginning

886

00:35:07,910 --> 00:35:05,670

of your talk you were talking about

887

00:35:09,260 --> 00:35:07,920

changing things like colour and this and

888

00:35:10,609 --> 00:35:09,270

and and so you change something and then

889

00:35:11,030 --> 00:35:10,619

it goes down you change something goes

890

00:35:12,620 --> 00:35:11,040

down

891

00:35:14,750 --> 00:35:12,630

the flipside that you're making me

892

00:35:16,490 --> 00:35:14,760

consider is that the most number of

893

00:35:18,650 --> 00:35:16,500

studies I've ever done in one place is

894

00:35:20,270 --> 00:35:18,660

three I've actually done it in six

895

00:35:23,000 --> 00:35:20,280

places I'm wondering if changing the

896

00:35:27,220 --> 00:35:23,010

actual place might mitigate somehow the

897

00:35:30,349 --> 00:35:27,230

decline effect that's interesting I've

898

00:35:31,700 --> 00:35:30,359

I've found that I can't replicate

899

00:35:33,160 --> 00:35:31,710

certain effects but then when other

900

00:35:36,049 --> 00:35:33,170

people try them for the first time

901
00:35:37,880 --> 00:35:36,059
sometimes they can get it and then they

902
00:35:41,900 --> 00:35:37,890
suffer that another they their own local

903
00:35:43,490 --> 00:35:41,910
decline effect so it there may be when

904
00:35:45,950 --> 00:35:43,500
all the dust settles some sort of

905
00:35:47,870 --> 00:35:45,960
peculiar rules about what the sort of

906
00:35:49,200 --> 00:35:47,880
geography that you know you get a local

907
00:35:51,780 --> 00:35:49,210
decline effect and then a glow

908
00:35:54,180 --> 00:35:51,790
decline effect and that's certainly

909
00:35:56,550 --> 00:35:54,190
possible we just need to do a lot more

910
00:35:59,340 --> 00:35:56,560
research in the parameters to be able to

911
00:36:01,500 --> 00:35:59,350
establish those kind of rules I think

912
00:36:03,570 --> 00:36:01,510
the problem is that in science the ideal

913
00:36:05,370 --> 00:36:03,580

is that you replicate an experiment

914

00:36:07,320 --> 00:36:05,380

perfectly but I have a little statement

915

00:36:09,600 --> 00:36:07,330

I wrote so you have to read here no

916

00:36:12,060 --> 00:36:09,610

experiment is perfectly isolated and

917

00:36:14,310 --> 00:36:12,070

perfectly replicable because the

918

00:36:16,710 --> 00:36:14,320

universe changes around the experiment

919

00:36:17,220 --> 00:36:16,720

no matter how hard we try to object

920

00:36:19,590 --> 00:36:17,230

avait

921

00:36:21,690 --> 00:36:19,600

isolate the experiment from the universe

922

00:36:23,760 --> 00:36:21,700

now we've all been saying for the past

923

00:36:26,670 --> 00:36:23,770

few days that all things are connected

924

00:36:28,500 --> 00:36:26,680

when it comes to size of X then this

925

00:36:31,470 --> 00:36:28,510

change in the universe should be taken

926
00:36:33,480 --> 00:36:31,480
into account regarding testing any side

927
00:36:35,610 --> 00:36:33,490
effects in other words why I'm

928
00:36:38,700 --> 00:36:35,620
suggesting is that there's a certain

929
00:36:42,650 --> 00:36:38,710
half-life just due to the normal change

930
00:36:45,390 --> 00:36:42,660
in the universe that we see as time and

931
00:36:50,190 --> 00:36:45,400
this should be taken account into all

932
00:36:52,230 --> 00:36:50,200
sigh experiments it is the idea that the

933
00:36:54,180 --> 00:36:52,240
universe is changing in a sense what

934
00:36:56,430 --> 00:36:54,190
we're trying to do with SCI experiments

935
00:36:59,220 --> 00:36:56,440
we're trying to bend the universe around

936
00:37:00,750 --> 00:36:59,230
any individual experiment but the

937
00:37:02,490 --> 00:37:00,760
universe is changing around the

938
00:37:04,740 --> 00:37:02,500

experiment at the same time and we have

939

00:37:08,040 --> 00:37:04,750

to take this into account and perhaps

940

00:37:10,410 --> 00:37:08,050

people who have psychics and such have

941

00:37:12,530 --> 00:37:10,420

success after success if it's possible

942

00:37:15,120 --> 00:37:12,540

with side-effects or somehow

943

00:37:16,970 --> 00:37:15,130

subconsciously taking this change in the

944

00:37:19,740 --> 00:37:16,980

universe into effect from time to time

945

00:37:22,350 --> 00:37:19,750

well I think that's certainly something

946

00:37:24,480 --> 00:37:22,360

to consider if you imagine that the

947

00:37:29,760 --> 00:37:24,490

universe is sort of gradually changing

948

00:37:33,630 --> 00:37:29,770

and that changes in in changes in the

949

00:37:35,040 --> 00:37:33,640

universe are associated with reduction

950

00:37:37,320 --> 00:37:35,050

in the client effects then that could

951
00:37:39,830 --> 00:37:37,330
also explain why you see these recovery

952
00:37:42,090 --> 00:37:39,840
effects that it may be that over time

953
00:37:43,230 --> 00:37:42,100
there the experiment is even though

954
00:37:44,820 --> 00:37:43,240
you're seemingly doing the same

955
00:37:49,580 --> 00:37:44,830
experiment you're not really and that's

956
00:37:53,610 --> 00:37:52,230
that that certainly certainly could be

957
00:37:55,980 --> 00:37:53,620
the case I wish the universe would

958
00:37:57,810 --> 00:37:55,990
change faster so that my decline effects

959
00:38:00,480 --> 00:37:57,820
didn't happen so quickly would be slower

960
00:38:02,240 --> 00:38:00,490
right kicking ass a stir I wish we could

961
00:38:08,390 --> 00:38:02,250
ask the questions faster so we

962
00:38:10,790 --> 00:38:08,400
get more there there are three factors

963
00:38:12,860 --> 00:38:10,800

that could be playing on the size effect

964

00:38:15,230 --> 00:38:12,870

that comes first quite high and then

965

00:38:17,480 --> 00:38:15,240

comes down one could be the real size

966

00:38:19,970 --> 00:38:17,490

effect you might say and the other could

967

00:38:22,220 --> 00:38:19,980

be two possible augmentations of that

968

00:38:24,200 --> 00:38:22,230

size effect and two of the candidates

969

00:38:27,920 --> 00:38:24,210

for those augmentations are the

970

00:38:30,350 --> 00:38:27,930

experimenter effect and the universe the

971

00:38:32,300 --> 00:38:30,360

it could be that the experimenter is not

972

00:38:34,850 --> 00:38:32,310

the same experimenter and that whatever

973

00:38:37,370 --> 00:38:34,860

constitutes the experimenter effect has

974

00:38:39,850 --> 00:38:37,380

it itself has declined just the

975

00:38:42,620 --> 00:38:39,860

enthusiasm or the surprise on the

976

00:38:45,230 --> 00:38:42,630

staking your whole career on it but the

977

00:38:47,120 --> 00:38:45,240

universe and a lot of the papers that

978

00:38:48,800 --> 00:38:47,130

we've been hearing imply that there's a

979

00:38:51,680 --> 00:38:48,810

kind of a cooperation between the

980

00:38:54,800 --> 00:38:51,690

universe and what we perceive or can do

981

00:38:57,260 --> 00:38:54,810

and there's no reason why whatever the

982

00:39:00,170 --> 00:38:57,270

universe refers to why it should give a

983

00:39:03,440 --> 00:39:00,180

damn after a while to be at your service

984

00:39:05,630 --> 00:39:03,450

as an experimenter to turn you in the

985

00:39:07,370 --> 00:39:05,640

right direction if you've turned in the

986

00:39:10,010 --> 00:39:07,380

right direction fine if you haven't fine

987

00:39:15,770 --> 00:39:10,020

it's just gonna poop out and go augment

988

00:39:17,810 --> 00:39:15,780

somebody else's research yeah I you know

989

00:39:21,260 --> 00:39:17,820

I I can't speak for the I cannot speak

990

00:39:24,940 --> 00:39:23,150

but but what I can't say is is that you

991

00:39:26,630 --> 00:39:24,950

mentioned a really important

992

00:39:27,920 --> 00:39:26,640

interpretation of the client fact that I

993

00:39:31,100 --> 00:39:27,930

didn't mention and this is one that I

994

00:39:33,020 --> 00:39:31,110

know Dean favors and Daryl BEM which is

995

00:39:36,080 --> 00:39:33,030

the idea that it's driven by the

996

00:39:37,580 --> 00:39:36,090

enthusiasm of the experimenter than when

997

00:39:39,320 --> 00:39:37,590

experimenters first start running their

998

00:39:42,080 --> 00:39:39,330

studies that they're really gung-ho and

999

00:39:44,690 --> 00:39:42,090

and somehow that gets communicated to

1000

00:39:45,740 --> 00:39:44,700

the participant I just have to emphasize

1001
00:39:47,660 --> 00:39:45,750
in there I mean some of these studies

1002
00:39:49,430 --> 00:39:47,670
we've run them there's very little

1003
00:39:51,050 --> 00:39:49,440
interaction with the experiment or

1004
00:39:52,430 --> 00:39:51,060
they're basically interacting just for

1005
00:39:53,890 --> 00:39:52,440
the computer and we still see the client

1006
00:39:56,300 --> 00:39:53,900
effect so well I think that the

1007
00:39:59,750 --> 00:39:56,310
enthusiasm of the experimenter may be

1008
00:40:00,980 --> 00:39:59,760
part of it I I'm not persuaded that that

1009
00:40:04,300 --> 00:40:00,990
alone would explain it

1010
00:40:06,920 --> 00:40:04,310
you've largely just answered my question

1011
00:40:10,040 --> 00:40:06,930
we've seen all over the place decline

1012
00:40:12,980 --> 00:40:10,050
effects where the interaction between

1013
00:40:14,510 --> 00:40:12,990

the experimenter and the experiment even

1014

00:40:15,740 --> 00:40:14,520

if it's just a computer running I don't

1015

00:40:17,780 --> 00:40:15,750

know if you saw my

1016

00:40:20,810 --> 00:40:17,790

last night where we see this you know

1017

00:40:23,560 --> 00:40:20,820

huge decline effect in a compute pure

1018

00:40:26,270 --> 00:40:23,570

computer experiment but we really can

1019

00:40:27,950 --> 00:40:26,280

connect it with our own enthusiasm and

1020

00:40:30,980 --> 00:40:27,960

that does seem to be the most

1021

00:40:32,960 --> 00:40:30,990

parsimonious answer to the decline

1022

00:40:36,109 --> 00:40:32,970

effect it does mean that all of these

1023

00:40:37,790 --> 00:40:36,119

experiments involve sigh but that's not

1024

00:40:40,190 --> 00:40:37,800

a far reach from what we've been seeing

1025

00:40:45,520 --> 00:40:40,200

so I'm surprised that that's not your

1026

00:40:50,030 --> 00:40:45,530

primary thought well I mean I would say

1027

00:40:52,070 --> 00:40:50,040

it's it's hard for me to believe let me

1028

00:40:53,599 --> 00:40:52,080

just be emphasized I am open to all

1029

00:40:54,770 --> 00:40:53,609

possible explanations there are two

1030

00:40:58,550 --> 00:40:54,780

different versions of the enthusiasm

1031

00:41:00,020 --> 00:40:58,560

account one is a non-conventional

1032

00:41:02,510 --> 00:41:00,030

account which is just that the

1033

00:41:04,810 --> 00:41:02,520

participant themselves is picking up

1034

00:41:07,130 --> 00:41:04,820

directly on an interaction with the

1035

00:41:08,960 --> 00:41:07,140

researcher and that's having its effect

1036

00:41:12,710 --> 00:41:08,970

the other possibility is that somehow

1037

00:41:15,410 --> 00:41:12,720

the researchers enthusiasm is making its

1038

00:41:19,640 --> 00:41:15,420

way into the ether and that's driving

1039

00:41:22,970 --> 00:41:19,650

the effect that the second possibility

1040

00:41:26,630 --> 00:41:22,980

is certainly there it's it's not obvious

1041

00:41:28,820 --> 00:41:26,640

to me that researchers enthusiasm for

1042

00:41:31,280 --> 00:41:28,830

effects should necessarily show a

1043

00:41:34,250 --> 00:41:31,290

decline I would I mean I've seen my

1044

00:41:36,440 --> 00:41:34,260

postdoc Michael Franklin you know the

1045

00:41:38,120 --> 00:41:36,450

longer that he's been involved in this

1046

00:41:40,010 --> 00:41:38,130

he's invested more so you could easily

1047

00:41:41,359 --> 00:41:40,020

make the case that the longer you've

1048

00:41:42,890 --> 00:41:41,369

been involved in research and you've

1049

00:41:44,450 --> 00:41:42,900

started presenting and stuff you should

1050

00:41:46,730 --> 00:41:44,460

be more excited about it because you've

1051
00:41:48,530 --> 00:41:46,740
really put your name on it so it's a

1052
00:41:50,630 --> 00:41:48,540
peculiar kind of enthusiasm that

1053
00:41:55,339 --> 00:41:50,640
dwindles as you've staked more of your

1054
00:41:57,470 --> 00:41:55,349
reputation on it with that view in mind

1055
00:41:59,930 --> 00:41:57,480
I think the word is intent it's not

1056
00:42:03,890 --> 00:41:59,940
necessarily enthusiasm it's focused

1057
00:42:06,380 --> 00:42:03,900
intent and how possibly how rooted we

1058
00:42:08,210 --> 00:42:06,390
are in a sense that there is only this

1059
00:42:10,160 --> 00:42:08,220
reality that we're experimenting with

1060
00:42:11,329 --> 00:42:10,170
there have been a whole bunch of

1061
00:42:14,420 --> 00:42:11,339
researchers and a whole bunch of guys

1062
00:42:16,940 --> 00:42:14,430
one that comes to mind is a very strong

1063
00:42:18,530 --> 00:42:16,950

peak a guy named Michael Hutchison had

1064

00:42:20,390 --> 00:42:18,540

an effect named after him Hutchison in

1065

00:42:24,380 --> 00:42:20,400

fact he could do certain things with his

1066

00:42:26,359 --> 00:42:24,390

machines that nobody else could and this

1067

00:42:28,099 --> 00:42:26,369

is just if you think about it what is

1068

00:42:28,819 --> 00:42:28,109

the nature of the Year Ally that your

1069

00:42:30,859 --> 00:42:28,829

work

1070

00:42:32,660 --> 00:42:30,869

and then you have some researchers like

1071

00:42:34,540 --> 00:42:32,670

William tiller and there's earlier

1072

00:42:37,339 --> 00:42:34,550

speaker URI con talked about

1073

00:42:39,109 --> 00:42:37,349

conditioning space and altering the

1074

00:42:42,020 --> 00:42:39,119

space that you're working in so that it

1075

00:42:44,780 --> 00:42:42,030

no longer behaves the way quote normal

1076

00:42:47,030 --> 00:42:44,790

whatever that is space space and so I'd

1077

00:42:50,569 --> 00:42:47,040

say the focus of intent by the

1078

00:42:53,000 --> 00:42:50,579

researcher can flag the enthusiasm may

1079

00:42:54,290 --> 00:42:53,010

be there but there is a real and there

1080

00:42:56,780 --> 00:42:54,300

are tons of shamanic and other

1081

00:42:58,609 --> 00:42:56,790

traditions were where this is a key to

1082

00:43:01,370 --> 00:42:58,619

manifesting the reality that you really

1083

00:43:03,920 --> 00:43:01,380

want so I know that's fairly far out but

1084

00:43:07,220 --> 00:43:03,930

well we're in this is the right group

1085

00:43:09,290 --> 00:43:07,230

for that I just want to say that this

1086

00:43:11,329 --> 00:43:09,300

notion is sort of in that's getting

1087

00:43:13,910 --> 00:43:11,339

close to the notion of habituation which

1088

00:43:15,470 --> 00:43:13,920

is the sort of variation on the cosmic

1089

00:43:18,020 --> 00:43:15,480

thing but I think you're right it could

1090

00:43:22,609 --> 00:43:18,030

well be driven just by the individual as

1091

00:43:26,059 --> 00:43:22,619

opposed to buy some more global kind of

1092

00:43:27,980 --> 00:43:26,069

a situation so since there are since

1093

00:43:30,530 --> 00:43:27,990

arbitrary random processes can't have

1094

00:43:33,530 --> 00:43:30,540

arbitrarily long what you might consider

1095

00:43:36,140 --> 00:43:33,540

hits right is there a anti symmetric

1096

00:43:37,849 --> 00:43:36,150

effect here so in the sense that if you

1097

00:43:39,380 --> 00:43:37,859

had an experiment that was negative at

1098

00:43:42,589 --> 00:43:39,390

first it's more likely that you're not

1099

00:43:44,990 --> 00:43:42,599

going to consider it again so that file

1100

00:43:46,579 --> 00:43:45,000

drawer effect seems to me maybe make

1101

00:43:49,190 --> 00:43:46,589

sense to me that there is no decline

1102

00:43:52,700 --> 00:43:49,200

effect and that the total sample space

1103

00:43:55,160 --> 00:43:52,710

of experiments isn't robust absolutely

1104

00:43:57,349 --> 00:43:55,170

that that is one of the major

1105

00:43:59,870 --> 00:43:57,359

explanations to be and that's why we

1106

00:44:02,359 --> 00:43:59,880

need to have this open database

1107

00:44:04,520 --> 00:44:02,369

repository because according to that

1108

00:44:08,210 --> 00:44:04,530

interpretation there should be a huge

1109

00:44:11,059 --> 00:44:08,220

number of failed first experiments that

1110

00:44:12,620 --> 00:44:11,069

you know are not or not pursued and so

1111

00:44:14,569 --> 00:44:12,630

what you really need to do is to look at

1112

00:44:16,730 --> 00:44:14,579

the frequency with which you know

1113

00:44:18,740 --> 00:44:16,740

initial experiments are failing versus

1114

00:44:20,329 --> 00:44:18,750

succeeding and you could do Monte Carlo

1115

00:44:22,809 --> 00:44:20,339

simulations to see whether or not that

1116

00:44:24,710 --> 00:44:22,819

would be sufficient to produce the

1117

00:44:26,660 --> 00:44:24,720

magnitude of the client effects that we

1118

00:44:29,059 --> 00:44:26,670

get but the only way we can do that is

1119

00:44:31,069 --> 00:44:29,069

by knowing situating the positive

1120

00:44:32,480 --> 00:44:31,079

results within the context of all the

1121

00:44:34,790 --> 00:44:32,490

negative results that may or may not be

1122

00:44:36,800 --> 00:44:34,800

out there thank you he pretty much stole

1123

00:44:39,380 --> 00:44:36,810

my thunder my my question was gonna be

1124

00:44:40,700 --> 00:44:39,390

you can only have a decline effect if

1125

00:44:42,170 --> 00:44:40,710

you already had a positive correlation

1126

00:44:43,760 --> 00:44:42,180

to begin with

1127

00:44:45,170 --> 00:44:43,770

has anyone conducted experiments where

1128

00:44:47,510 --> 00:44:45,180

they did not have a positive or negative

1129

00:44:49,640 --> 00:44:47,520

correlation continue that experiment to

1130

00:44:52,120 --> 00:44:49,650

see if you had and absolutely and then

1131

00:44:54,170 --> 00:44:52,130

it declining right this is another

1132

00:44:55,730 --> 00:44:54,180

approach that I think would be very

1133

00:44:57,650 --> 00:44:55,740

useful what I think would be a great

1134

00:45:01,250 --> 00:44:57,660

idea so let me put this out here right

1135

00:45:02,600 --> 00:45:01,260

now is to come up with 25 experiments

1136

00:45:04,760 --> 00:45:02,610

that have not been run that are novel

1137

00:45:06,980 --> 00:45:04,770

that ought to maybe work given what we

1138

00:45:09,710 --> 00:45:06,990

know but have not been done and then get

1139

00:45:11,300 --> 00:45:09,720

the group of researchers to commit to

1140

00:45:14,690 --> 00:45:11,310

running each one of those experiments

1141

00:45:17,120 --> 00:45:14,700

ten times regardless of whether or not

1142

00:45:20,540 --> 00:45:17,130

they worked the first time

1143

00:45:22,910 --> 00:45:20,550

and then look to see the pattern of of

1144

00:45:24,350 --> 00:45:22,920

significance the decline effect account

1145

00:45:26,240 --> 00:45:24,360

would predict that you should be more

1146

00:45:28,070 --> 00:45:26,250

likely to get positive results in the

1147

00:45:30,080 --> 00:45:28,080

first trial than the fifth trial but

1148

00:45:31,910 --> 00:45:30,090

that is exactly the kind of paradigm

1149

00:45:33,980 --> 00:45:31,920

that's required and it requires people

1150

00:45:35,570 --> 00:45:33,990

to carry on doing the studies repeatedly

1151
00:45:37,750 --> 00:45:35,580
even when they don't get the effects

1152
00:45:42,560 --> 00:45:37,760
initially exactly exactly

1153
00:45:45,290 --> 00:45:42,570
thrown out the window exactly you

1154
00:45:48,260 --> 00:45:45,300
presented it somewhat facetiously and

1155
00:45:50,540 --> 00:45:48,270
the audience laughed but I am actually

1156
00:45:52,910 --> 00:45:50,550
rather charmed by your proposal that the

1157
00:45:55,370 --> 00:45:52,920
decline effect could actually decline do

1158
00:45:57,770 --> 00:45:55,380
you have any estimate for how big a

1159
00:46:00,110 --> 00:45:57,780
research effort on the decline effect

1160
00:46:01,850 --> 00:46:00,120
itself would be needed in order to run

1161
00:46:03,610 --> 00:46:01,860
it into the ground so that we don't need

1162
00:46:08,240 --> 00:46:03,620
to worry about it any more

1163
00:46:10,910 --> 00:46:08,250

I was only half facetiously I I also

1164

00:46:13,100 --> 00:46:10,920

think that the best hope of getting rid

1165

00:46:16,880 --> 00:46:13,110

of the decline effect is by studying and

1166

00:46:19,190 --> 00:46:16,890

I have no idea how much effort that

1167

00:46:22,760 --> 00:46:19,200

would require but that's certainly where

1168

00:46:24,140 --> 00:46:22,770

some of my energy is going I am I was

1169

00:46:26,270 --> 00:46:24,150

wondering if you could talk a little bit

1170

00:46:27,920 --> 00:46:26,280

more about sort of the local versus

1171

00:46:30,500 --> 00:46:27,930

global decline effects and what you know

1172

00:46:33,020 --> 00:46:30,510

about that and then secondly kind of in

1173

00:46:35,060 --> 00:46:33,030

conjunction if something about having

1174

00:46:36,920 --> 00:46:35,070

information about one's own experiments

1175

00:46:39,380 --> 00:46:36,930

drives the decline effect in some way

1176

00:46:42,770 --> 00:46:39,390

could that not be a problem for this

1177

00:46:44,570 --> 00:46:42,780

sort of term metadata idea where when we

1178

00:46:46,370 --> 00:46:44,580

now have all the information available

1179

00:46:49,070 --> 00:46:46,380

about everybody's possible experiments

1180

00:46:50,900 --> 00:46:49,080

it's somehow it's harder to have your

1181

00:46:54,060 --> 00:46:50,910

own local version of it decline effect

1182

00:46:58,620 --> 00:46:56,700

most of that is just needs to be studied

1183

00:47:00,840 --> 00:46:58,630

I mean I think we really need to go I

1184

00:47:02,790 --> 00:47:00,850

think we need to admit that the client

1185

00:47:03,780 --> 00:47:02,800

effect is an area that deserve studying

1186

00:47:08,070 --> 00:47:03,790

and then look at it very systematically

1187

00:47:11,220 --> 00:47:08,080

both at the local and at the and at the

1188

00:47:12,930 --> 00:47:11,230

global level I also think it's a very

1189

00:47:14,310 --> 00:47:12,940

intriguing possibility what triggers the

1190

00:47:17,310 --> 00:47:14,320

decline effect is that the running of

1191

00:47:20,910 --> 00:47:17,320

the experiment or is it the analyzing of

1192

00:47:21,930 --> 00:47:20,920

the data and what I think is quite if if

1193

00:47:23,910 --> 00:47:21,940

we're gonna go with some of the

1194

00:47:25,830 --> 00:47:23,920

non-conventional accounts you know the

1195

00:47:28,170 --> 00:47:25,840

sort of Heisenberg thing what may really

1196

00:47:29,370 --> 00:47:28,180

Drive the effect is not the point in

1197

00:47:31,850 --> 00:47:29,380

which it's collected but the point in

1198

00:47:34,350 --> 00:47:31,860

which the experimenter looks at the

1199

00:47:37,200 --> 00:47:34,360

results and that's the kind of thing you

1200

00:47:39,300 --> 00:47:37,210

could also systematically vary you know

1201

00:47:42,210 --> 00:47:39,310

when do they peak and there's this I

1202

00:47:43,950 --> 00:47:42,220

there's the possibility that you want to

1203

00:47:45,720 --> 00:47:43,960

be really it may be that the peaking is

1204

00:47:47,400 --> 00:47:45,730

really the problem here so you know

1205

00:47:49,350 --> 00:47:47,410

really collect a lot of end before you

1206

00:47:51,480 --> 00:47:49,360

peak because once you peak that's when

1207

00:47:53,160 --> 00:47:51,490

the effect starts going down those kinds

1208

00:47:55,410 --> 00:47:53,170

of things systematically controlling

1209

00:47:57,480 --> 00:47:55,420

when the peak is done and who's speaking

1210

00:47:59,700 --> 00:47:57,490

how many people are peaking might be one

1211

00:48:00,740 --> 00:47:59,710

way of finding some of the side effects

1212

00:48:03,570 --> 00:48:00,750

at the meta level

1213

00:48:06,350 --> 00:48:03,580

well somebody who's quite familiar

1214

00:48:09,150 --> 00:48:06,360

painfully familiar with decline effects

1215

00:48:12,870 --> 00:48:09,160

we studied it for many years over many

1216

00:48:17,940 --> 00:48:12,880

different experiments it's quite robust

1217

00:48:19,890 --> 00:48:17,950

oh here it does seem to occur at local

1218

00:48:21,920 --> 00:48:19,900

as well as middle levels and

1219

00:48:24,510 --> 00:48:21,930

incidentally we also looked at

1220

00:48:29,010 --> 00:48:24,520

experiments that had no effect and there

1221

00:48:32,130 --> 00:48:29,020

was no decline they were pretty a pretty

1222

00:48:36,240 --> 00:48:32,140

level one thing that I think is worth

1223

00:48:38,700 --> 00:48:36,250

mentioning is the the oscillations one

1224

00:48:41,550 --> 00:48:38,710

season the affected it's very seldom a

1225

00:48:46,280 --> 00:48:41,560

direct one-to-one decline what you're

1226

00:48:48,930 --> 00:48:46,290

seeing is a trend superimposed on

1227

00:48:53,010 --> 00:48:48,940

fluctuations that you would expect in a

1228

00:48:56,180 --> 00:48:53,020

random process and they do seem to

1229

00:48:59,610 --> 00:48:56,190

recover after a certain period of time

1230

00:49:01,640 --> 00:48:59,620

but this has led us to suspect going

1231

00:49:05,010 --> 00:49:01,650

back to our friend Verner Heisenberg

1232

00:49:07,310 --> 00:49:05,020

that maybe there's something in here

1233

00:49:10,100 --> 00:49:07,320

that relates to the concept of

1234

00:49:12,860 --> 00:49:10,110

uncertainty in fact we have a paper that

1235

00:49:17,840 --> 00:49:12,870

we called information and uncertainty

1236

00:49:21,070 --> 00:49:17,850

and I it may be that since we are

1237

00:49:24,170 --> 00:49:21,080

dealing with fundamentally probabilistic

1238

00:49:25,910 --> 00:49:24,180

processes which of course we are

1239

00:49:29,770 --> 00:49:25,920

whenever we're doing statistical

1240

00:49:34,340 --> 00:49:29,780

analysis that the more we do the more

1241

00:49:37,550 --> 00:49:34,350

data we collect the the the more the

1242

00:49:40,120 --> 00:49:37,560

uncertainty is reduced and the

1243

00:49:43,130 --> 00:49:40,130

uncertainty may be an inherently

1244

00:49:46,610 --> 00:49:43,140

important component of driving these

1245

00:49:49,070 --> 00:49:46,620

effects so as you reduce the uncertainty

1246

00:49:52,070 --> 00:49:49,080

and attempt to enhance the noise the

1247

00:49:54,530 --> 00:49:52,080

signal relative to the noise you may

1248

00:49:57,170 --> 00:49:54,540

actually be driving out the source of

1249

00:49:59,180 --> 00:49:57,180

the effect you're looking for and it may

1250

00:50:01,790 --> 00:49:59,190

just be that you get to the some point

1251

00:50:05,600 --> 00:50:01,800

in the decline where you say enough of

1252

00:50:08,150 --> 00:50:05,610

this maybe I was just messing with my

1253

00:50:10,250 --> 00:50:08,160

own head and there's nothing there and

1254

00:50:12,830 --> 00:50:10,260

you go back into a state of high

1255

00:50:16,630 --> 00:50:12,840

uncertainty hmm and my god there it is

1256

00:50:19,490 --> 00:50:16,640

again but I think this idea of

1257

00:50:22,820 --> 00:50:19,500

probability and uncertainty is worth

1258

00:50:28,520 --> 00:50:22,830

looking at because in informational

1259

00:50:31,760 --> 00:50:28,530

systems that have statistical basis this

1260

00:50:33,500 --> 00:50:31,770

could be a very fundamental issue and it

1261

00:50:36,620 --> 00:50:33,510

could help us understand the process

1262

00:50:41,270 --> 00:50:36,630

better yeah but I'm awfully glad to hear

1263

00:50:43,340 --> 00:50:41,280

we're not the only I bet that sounds

1264

00:50:46,520 --> 00:50:43,350

right to me the uncertainty feels like

1265

00:50:47,990 --> 00:50:46,530

it may play a role and certainly there's

1266

00:50:50,600 --> 00:50:48,000

a sense in which one gets at least a

1267

00:50:52,970 --> 00:50:50,610

false sense of certainty as one keeps

1268

00:50:54,260 --> 00:50:52,980

seeing positive results one thing for

1269

00:50:56,220 --> 00:50:54,270

certain we have to move on to the next

1270

00:50:59,220 --> 00:50:56,230

speaker so thank John you Jonathan