Science Magazine Podcast

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Promo

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Music

Interviewer – Kerry Klein

Finally today, I'm here with news writer Carolyn Gramling, who's here to give us a rundown of some of the recent stories from our daily news site. So, Carolyn, in our first story we have a psychological look inside this behavioral experiment, the prisoner's dilemma.

Interviewee – Carolyn Gramling

Yes. People may be familiar with the prisoner's dilemma. It's sort of discussed often in terms of game theory and strategizing. The classic prisoner's dilemma setup is that you have two thieves who were caught for a crime, and they're separated and interrogated by the police. And if both of them stay silent, then they may get, let's say, a month of jail time. If both speak, they'll get a year. But if one person speaks and the other one does not rat his partner out, then the one who speaks gets off scot-free and the other person gets maybe two years. So it's a question of whether or not these people will cooperate or whether they will actually be competitive with each other.

Interviewer – Kerry Klein

And the short-term versus long-term payoffs.

Interviewee – Carolyn Gramling

Right, exactly.

Interviewer – Kerry Klein

So this is quite a common behavioral study. You know, what were researchers looking at this time?

Interviewee – Carolyn Gramling

Well, this time they wanted to understand if there was anything that actually might cause people to choose to cooperate or be competitive, what they termed defecting – in other words, you know, ratting out their opponent – based on their childhood environment. And so they created this setup where they had about 250 undergraduates come in, and they told them that they were going to play the prisoner's dilemma through multiple rounds against another human being, but on a computer. And actually they were just playing against the computer itself. And the computer was programmed to respond to their choices. If they defected, then the computer would defect. If they were cooperative, the computer would cooperate. And so they asked them to play this through

multiple rounds. And then they had them fill out a questionnaire about their childhood environments, and how much violence that they had experienced when they were children – either in their families or in their neighborhoods.

Interviewer – Kerry Klein
Ah, so it was a look at not just who would actually choose each one of these options, but why.

Interviewee – Carolyn Gramling
But why. Exactly. And it turned out that they had used both men and women subjects in this experiment, but only for the men, they actually found that those with more violent childhoods were more likely to defect much earlier in the game, and this was not true for women.

Interviewer – Kerry Klein
Wow. So this corroborates really a lot of other research that we've seen that shows a link between childhood adversity and behavior later on in life.

Interviewee – Carolyn Gramling
Yes. They had a couple of different ideas about why this might be happening. One of them is that, of course, a more unstable childhood could mean that you actually want to take your rewards now, that you have that mentality. It's more of a risk-taking behavior. But another possibility is that you might actually just have lowered expectations of other people. And so this is one of the links that I think they want to study much further.

Interviewer – Kerry Klein
Very interesting. And in our next study, we're looking at a way to fight a major problem in hospitals.

Interviewee – Carolyn Gramling
Yes. There is this nasty bacterium that's called – let me see if I can say it – *Clostridium difficile*, and it causes hundreds of thousands of infections including pain and bloating and diarrhea each year in hospitals and also thousands of deaths. And this is a real scourge of hospitals because you can get reinfected multiple times. And it produces these spores that can't be killed by handwashing or hand sanitizers.

Interviewer – Kerry Klein
So it's one of these bugs that even antibiotics sometimes can't really wipe out.

Interviewee – Carolyn Gramling
Yes. And in fact, antibiotics can make it worse, because they will kill the beneficial bacteria that are already in your gut.

Interviewer – Kerry Klein
So how is this research looking at a way to fight off this bacterium?

Interviewee – Carolyn Gramling
So one strategy that people had used in the past, because the antibiotics would kill off the beneficial gut bacteria, is they would actually introduce good bacteria back into the guts of the patients through something that's a little bit unpalatable. They would actually take ground up fecal matter from healthy patients and insert it into the digestive systems of the patients in order to try and put those good bacteria back in there.

Interviewer – Kerry Klein
Essentially a fecal transplant.

Interviewee – Carolyn Gramling
Yes, exactly.

Interviewer – Kerry Klein
And that certainly seems, you know, really icky. So I can see why people would really want an alternative to that.

Interviewee – Carolyn Gramling
It could also be really dangerous, because in addition to the good bacteria, you could be transferring pathogens as well.

Interviewer – Kerry Klein
Right. And so what's the strategy here?

Interviewee – Carolyn Gramling
So what they decided to do was actually try and figure out if you're going to put the good bacteria back in, what exactly is the magic recipe of good bacteria that might solve this? And they were looking at this in mice. They actually decided to take the fecal material and isolate 18 different bacteria from that fecal material that might somehow be part of the good recipe. And then they infected the mice with different cocktails – different mixes. They mixed and matched these bacteria in them. And what they found was that there were six bacteria – when they were combined into a cocktail – that cured the mice.

Interviewer – Kerry Klein
So someday we may be able to eliminate the need for antibiotics and fecal transplants, at least in this one case.

Interviewee – Carolyn Gramling
Yes. What they're looking to do is try and create a cocktail for humans, of course, and then maybe develop that into some sort of a suppository.

Interviewer – Kerry Klein
So that's at least a, you know, a somewhat pleasant treatment.

Interviewee – Carolyn Gramling
Yes. Much more palatable.

Interviewer – Kerry Klein
Alright. And our third story is also quite bizarre. It's about the collision between research and Dungeons & Dragons.

Interviewee – Carolyn Gramling
Yes. You didn't know there was one, but there is. Yes, in this case there's actually an unusual paper by a father-son team. The son is in 9th grade – or he was at the time – and his father is a cognitive scientist. And they were discussing over dinner a paper that the father was working on about gaze tracking and how difficult it is to be able to tell when you're tracking the gaze if people are looking at the eyes or the face because, of course, they're usually basically in the same place.

Interviewer – Kerry Klein
So where did Dungeons & Dragons come into play here?

Interviewee – Carolyn Gramling
Well, the son had a brainwave. He was pointing out to his father that the game Dungeons & Dragons contains a lot of different kinds of monsters that have eyes not just on the face but all over their bodies in various places, including, for example, on the ends of tentacles. And so he suggested to his dad that you could actually set up an experiment where you would have people playing the game – the role-playing game – and basically you could look when a monster would enter the room, do they look immediately at its eyes, wherever those happen to be? Or do they still look for its face?

Interviewer – Kerry Klein
Oh, very interesting. So the idea, obviously, didn't end there with this teenager's suggestion.

Interviewee – Carolyn Gramling
No, he actually decided to go for it. And so what he did was they set up some eye-tracker equipment, and they had 22 student participants who volunteered to do this experiment. And each of those participants would look at a character photo – a character from Dungeons & Dragons – for about five seconds, and then they would track where the participants looked. And what they found was basically that initially they would look right at the middle of the image, and then their eyes would move to wherever the eyes were. It didn't matter if they were on the face, they would just look wherever the eyes were.

Interviewer – Kerry Klein
So this is all really, you know, quite creative and very interesting, but is it important?

Interviewee – Carolyn Gramling
Well, it actually could have some real-world applications, one of them being that, for example, it could be a new technique for looking at whether children with autism, for example, are actually seeking out eyes or whether they look to the face. That would be

one application for that. Of course, there is a caveat, which is that these are two-dimensional images, and it's really different when you're looking at a live person looking back at you.

Interviewer – Kerry Klein
Right. Alright, so what else should we be keeping an eye out for on the site?

Interviewee – Carolyn Gramling
Well, one thing is that with the recent super-storm, Sandy, that struck the Northeast United States, we are looking for people to tell us how your lab weathered the storm. So we would welcome any input from listeners out there to *Science*Insider and let us know if there was any damage, if there's anything that we should know about how you weathered the rain, wind, and waves. And also, today on *Science*Live at 3 p.m., check out our live chat on what the U.S. election is going to mean for science.

Interviewer – Kerry Klein
Great. Thanks, Carolyn.

Interviewee – Carolyn Gramling
Thank you.

Interviewer – Kerry Klein
Carolyn Gramling is a news writer for *Science*. You can check out all of our news at news.sciencemag.org, including daily stories from *Science*NOW and science policy from *Science*Insider. And while you're there, be sure to check out *Science*Live, a live chat on the hottest science topics every Thursday at 3 p.m. U.S. Eastern time.