



Science Magazine Podcast Transcript, 17 August 2012

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Music

Interviewer - Isabelle Boni

Finally today David Grimm, online news editor of *Science*, is here to give us a rundown of some of the recent stories from our online daily news site news.sciencemag.org. So first off we have a story about a society that could have given the Egyptians a run for their money. Just who were the Chinchorro?

Interviewee - David Grimm

So, Isabelle, the Chinchorro people were a group of hunter-gatherers who lived in the northern coast of Chile and the southern coast of Peru thousands and thousands of years ago, in fact, it seems like they moved into the area about 10,000 years ago.

Interviewer - Isabelle Boni

So, why were these people so special?

Interviewee - David Grimm

Well, what made them special is they're actually the first known people to actually mummify their dead thousands of years, in fact, 3000 years before the Egyptians did it. And there's a big mystery about why they did it. Most societies that practice mummification were pretty complex societies. They tended to live in very large groups that were settled down for long periods of time. And the reason that's important is because that's thought to be how a sort of society evolve, how new ideas spread is to have this really critical mass of people that set in one place for a long period of time. But the Chinchorro weren't like that – they were they were these hunter-gatherers; their groups were only about 100 people or so; and they were on the move a lot. So, it's sort of been a mystery of how they came up with this practice of mummification before anybody else did.

Interviewer - Isabelle Boni

So, how did the researchers resolve this apparent contradiction in the type of society they had and the mummification process?

Interviewee - David Grimm

Well, what they did was they actually went back and they reconstructed the climate. They thought maybe it had something to do with the climate that the Chinchorro lived in.

And they took these ice cores from the Andes that enabled them to reconstruct what the weather was like during the time the Chinchorro people lived in this region. And what they found was that the Chinchorro's spent their lives, a lot of their lives in the Atacama Desert. And what they found was that this desert was pretty desolate and pretty arid. But sometime around 7000 years ago the desert seemed to be getting relatively a lot wetter. And what's interesting about that is that obviously you have these groups of people traveling around, and people are going to die. And what the Chinchorro did was that they buried their corpses, but they didn't bury them very far underground. And when you have this really dry climate – more than 7000 years ago – what was happening is a lot of these corpses because they weren't buried very well were actually rising to the surface of the desert. And any Chinchorro person walking around the desert would literally have seen thousands of these corpses. And because it was such an arid climate these corpses would have been really dried out; they would have been effectively naturally mummified.

Interviewer - Isabelle Boni

So this landscape of naturally mummified bodies apparently inspired the Chinchorro to artificially mummify their own bodies. What was their mummifying process?

Interviewee - David Grimm

Well the Chinchorro basically removed the skin of the corpses; they scoped out the organs; they stuffed the body with clay and dried plants and sticks. And once they had reattached the skin, they painted shiny black and red paint on the skin and actually even put wigs on the heads of these mummies, and you can actually see a picture of this on the site. As for why they did that and what sort of connection there was between them seeing sort of all of bodies, psychologists have suggested that when people are surrounded with death it can have a very powerful impact on their psyche and even on religious practices. So the idea would be that, you know, around 7000 years ago when the desert was getting wetter what would also happen around this time is that the Chinchorro population was getting bigger, becoming a little bit more stable. And this sort of coincided with the time when they are actually also seeing a lot of these natural mummies everywhere that somehow they decided, "Well we need to incorporate this into our cultural practices. We need to...as a way of dealing with all of this death around us, we're going to start creating mummies ourselves." At least that's the going hypothesis now. And that could explain why these people were really the first in the world to start mummifying their dead.

Interviewer - Isabelle Boni

Now just as mummies are preserved for long periods of time, so it seems are personalities. In our next article, we examined the stability of personality traits in frogs. Now what is significant about this study?

Interviewee - David Grimm

Well, Isabelle, the interesting thing about personality – at least when we're talking about humans or maybe even dogs or some other animals – is that it tends to be pretty stable throughout our lives. So if we're shy in the playground as children, it's likely that we're going to be perhaps shy in the boardroom as adults. Personality has sort of been thought

to be this thing that sticks with us throughout our lives. The reason frogs entered the equation is because, unlike most other animals, frogs undergo this really dramatic metamorphosis. When they first come onto the scene, they're tadpoles, which don't look anything like frogs. And they undergo this dramatic transformation where they become frogs. Not only do they look different, but their entire physiology changes. And the question is, you know, when you have a creature like this where they undergo such a dramatic transformation, does their personality change, as well, or do they retain like humans and other animals, retain a lot of the personality of their youth?

Interviewer - Isabelle Boni

What would be some potential disadvantages of retaining the same personality through life, especially as a metamorphosing animal?

Interviewee - David Grimm

Well one problem – I mean you can think of frogs or you can even think of caterpillars, which is another species that undergoes a pretty dramatic metamorphosis – in its youth, a high amount of activity may help it find food better than its peers do. But if you're an adult and you have a high amount of activity, that might actually also get you into trouble with predators. So there's sort of some disadvantages to maintaining the same personality over time. But what the researchers found in this study is that frogs really do seem to maintain their personality. The researchers took 75 wild tadpoles, and they ran a couple of tests on them. It's obviously a little hard to measure personality in these animals, but the researchers came up with a couple of tests. And in the first test, they placed a tadpole or frog in a new tank of water and they timed how much time it took for them to move for the first time. And in another experiment, they measured what fraction of the 10-minute period the animal spent in motion. So the first is sort of a test of how exploratory an animal is, and the second is sort of more of a test of how active an animal is. And what the researchers found is that tadpoles that tended to be more or less exploratory turned into frogs that were more or less exploratory and the same thing with their activity levels – tadpoles that had high activity levels also tended to become frogs with high activity levels and vice versa.

Interviewer - Isabelle Boni

So what does this study say for the purpose of personality, in general?

Interviewee - David Grimm

Sure. Well one of the big questions about personality is, "Why do we have it in the first place?" And some scientists have argued that it's an adaptation that helps us survive our environment. And in that case, it should change with metamorphosis. Because, you know, as we talked about before, caterpillars face much different challenges in their youth than they do as butterflies in adulthood. So you would want your personality to change over time. But other scientists have argued that personality is just sort of a byproduct of our physiology. If you have a high metabolism, for example, you're going to have a more active personality. And in that case, you would not expect personality to change over time. And that seems to be what the frog study, at least, is showing that personality may not be much more than sort of a byproduct for our activity. Of course,

this has only been shown in frogs so far, and it remains to be seen whether this is actually the case in human beings.

Interviewer - Isabelle Boni

Alright. And speaking of stable trends, researchers have known for a while that women are consistently more likely to suffer migraines than men. This next article explores the reasons why. So it appears that there is a biological/neurological basis for why women get more migraines. How did the researchers study this?

Interviewee - David Grimm

Well it's true – women seem to get a lot more migraines than men, in fact, they're about three times more likely than men to get migraines. And it's sort of been a mystery as to why. And so, what the researchers did in this new study was they recruited 44 men and women some of whom were migraine sufferers, some of whom weren't. And they tested a few things. First, they gave the volunteers a survey. And the first difference that they noticed is that women who had migraines tended to rate them as being more intense than the men did, and they also tended to find them a lot more unpleasant. Then, the researchers scanned the brains of men and women with and without migraines, and they found that female migraine sufferers showed slightly thicker gray matter in two regions of the brain. One, which is called the posterior insula, is known in pain processing so that seems to make sense. And the other one is called the precuneus, which has been linked to migraines but has also been known to be a fundamental brain hub that may house a person's consciousness or sense of self. And the researchers ran a few more tests – they compared the brain activity while the volunteers were actually experiencing pain. In this case, they had them touch something that felt like touching a hot cup of coffee. And they found that in women with migraines that the areas of their brains that they showed were thicker than those in the men seemed to be talking to each other. So what the researchers have really done here is they've really seemed to have found a physiological basis for why some women tend to have more migraines than men, but also why they might find these migraines a lot more unpleasant than the men do.

Interviewer - Isabelle Boni

So how has this new knowledge helped patients?

Interviewee - David Grimm

Well nothing has really been done with it yet, but it does suggest that there may be therapeutic avenues for treating both men and women. You know, if scientists can really sort of isolate the parts of the brain that are involved in migraines and are involved in the processing of pain, that may lead to the development of new drugs that could help alleviate these disorders.

Interviewer - Isabelle Boni

So, what are some other stories we have on our online daily news site?

Interviewee - David Grimm

Well, Isabelle, for *ScienceNOW* we've got a story about the most massive galaxy cluster ever found; also a story about a male birth control pill. Have scientists finally overcome the challenges of creating a birth control pill for men? And on *ScienceInsider* we've got a story about a new report on the state of the world's oceans; also a story about how a new Missouri Right to Pray Law might limit the teaching of evolution in that state. So be sure to check out all of these stories on the site.

Interviewer - Isabelle Boni

Thank you, David Grimm. David Grimm is the online news editor for *Science*. You can check out the latest news and the policy blog, *ScienceInsider*, at news.sciencemag.org where you can also join a live chat, *ScienceLive*, on the hottest science topics every Thursday at 3 p.m. U.S. Eastern time.