

The long and sordid story of race and hypertension

Erik: Hey, guys, where the heck have you been?

Jo: Well, I went to India...[peacock mating call]

Jim: And I played some guitar and read Charles King's lascivious history of how Boas and some of his anthropology students influenced ideas about race and gender in the 20th century. Where the heck were you, Erik?

Erik: I went to the UK [Order, Ordeeerrrr], where I enjoyed the distinct pleasure of unclogging toilets and navigating the National Healthcare System for a couple of months.

Jo: Um what.

Erik: ...By which I mean, I led a study abroad program.

Jo: Oh, i did that once. It was great. Just really great. Ahem, so anyway, when we left off like three months ago, what were we doing?

Jim: We were in the middle of a really great mini-series on race and health, remember? We had done two episodes--one on studies of race and health in antebellum America where doctors were trying to medicalize slaves for attempting to run away and all other kinds of crazy stuff. Then we did a second one on sickle cell disease and race.

Jo: Oh yeah! Those were good. We should do more of them.

Jim: Well it just so happens that we're about to, right now.

GUITAR INTRO

Hi I'm Jim, Erik, Jo, and this is Speaking of Race.

Erik: Okay, so we've been on hiatus for a bit here. I need to stretch ... or warm-up or something. Also, you two are the health experts, so I'm going to force you into doing most of the talking. What are we going to talk about in our third episode on race & health?

Jim: Today we're going to tackle another major topic in race and health: hypertension (that is, high blood pressure).

Jo: Yeah, one of the biggest racial health disparities in the US today is in cardiovascular health, like what we see in heart attacks and blood pressure levels between white and black groups. I pulled a quote about this from the American Heart Association, which says that hypertension in African Americans is "among the highest in the world. More than 40 percent of non-Hispanic African-American men and women have

high blood pressure. For African-Americans, high blood pressure also develops earlier in life and is usually more severe.” And the 2007-10 NHANES, which is our national health survey in the US, recorded about 45% of AA adults as compared to 32% of whites with hypertension. That’s a pretty big difference.

Erik: I thought it was my job to read quotes.

Jo: I thought you were “stretching.”

Erik: Oh yeah, good point. Okay, so you’re saying it’s an important public health question. But I thought basically everyone knew this. Isn’t it common knowledge that hypertension is a thing people of African descent struggle with in the US more than people of European descent?

Jim: Maybe people say that they know it. But--just like everything else we talk about on this podcast--it turns out that high blood pressure has a long and really interesting history of being scrutinized in studies of race; first, by people interested in proving a genetic basis for the biology of race, then by individuals focused on the effect of salt---

Jo: --and I’ll chip in to say that it’s still studied by scholars--some of us included--interested in exploring the complex ways that stress and social inequality become embodied in poor health.

Jim: The case of BP and race is a great example of what legal scholar and sociologist Dorothy Roberts means by the phrase, “Race is not biological. But it does kill people.”

Erik: That’s catchy! I think I’ve heard both of you use that phrase before. What exactly do we mean when we say it?

Jo: Well, in the two years or so that we’ve been working on this podcast, we’ve tried to show over and over again that the idea that race is a real, biologically-based characteristic of humans is not true. But that doesn’t mean that race doesn’t exist as a *cultural* fact of life imposed by people groups upon each other. And in many cases, those cultural beliefs and practices have very real biological effects.

Jim: In this case, people started out believing that a simple genetic mechanism was underlying the differences in BP between black and white groups in the USA (which is where most of the early work was conducted). Even when researchers focused in on salt intake and potential genetic differences in how we handle salt in the body, simple answers have not been forthcoming (Ines, Van Anthony, & Pedro, 2015). As we began to realize that biology *wasn’t* causing all of the BP disparities between racial groups, we returned once again to the notion that cultural issues, including out-and-out racism, were creating situations that caused high BP in some individuals, rather than innate biological differences.

Erik: Wait, didn’t ... you just give up the punch line?

Jim: Kinda. That’s the story we’re going to trace today; and using BP is a great way to do it because people have been looking at this stuff--and messing it up--for over a century.

Erik: Well, sounds good to me! So, where does this story begin?

Jim: 4,000 years ago.

Jo: This is going to be a long episode.

Erik: They had the ability to detect high blood pressure 4,000 years ago?!

Jim: They called it “hard pulse” then, but yeah.

Jo: Practitioners of Ayurvedic medicine in India were checking on their patients’ cardiovascular health by gently palpating them centuries ago (Saklayen & Deshpande, 2016).

Erik: Okay! Covering four millennia in one episode!

Jim: Not quite! It wasn’t until the blood pressure cuff was invented in 1896, and until physicians standardized the practice of what to listen to through a stethoscope in 1905, that anyone took scientifically useful measurements of hypertension. In 1904, the first paper came out suggesting that hypertension was related to salt consumption. And by 1929, BP differences between groups had been noted. Significantly for our story, the physician Cyril Donnison (Donnison, 1929) had been working in Kenya during the late 1920s and noticed that there were no cases of high blood pressure among 1,800 hospital admissions! He later published a book suggesting that hypertension, among a handful of other diseases, was the consequence not adapting behaviorally to the stress of modern life—an early biocultural hypothesis (Donnison, 1938).

Erik: Wait, what do you mean, “biocultural”?

Jo: I think he means that Donnison was recognizing that high blood pressure had both biological and cultural or social causes. That’s the nature of blood pressure: it’s sensitive to stress. I mean, blood pressure is sensitive to lots of other things too, like how much salt you eat. But the fact that it responds to stress means that any kind of stressful experience can become embodied through blood pressure.

Erik: Okay, so people had figured out how to measure BP in the early 20th century. When did it start getting linked to race?

Jim: As early as the 1930s, from what I can find. A 1932 survey of white and black workmen reported higher blood pressures across all ages for the black workers (Adams, 1932).

Jo: But anthropologists got involved in the study of blood pressure pretty quickly thereafter, right?

Jim: Sort of...in the late 1950s the anthropologist Norman Scotch brought back Donnison’s idea that high blood pressure came from not meeting environmental demands with adaptive behavior (Scotch & Geiger,

1963). By the 1960s, there was substantial evidence from a number of surveys to indicate that African Americans experienced hypertension at nearly *twice* the level that American whites did.

Erik: So by the 1960s, anthropologists and physicians had noticed that Americans of African descent tended to have higher BP than American whites. Let me guess--did they then speculate that this demonstrated some kind of biological underpinning for white superiority?

Jo: So cynical! Is this what being in Britain does to you? Does it just make you cynical?

Jim: In this case, what's interesting is that researchers saw that it *wasn't* that simple.

Erik: Plot twist!

Jim: By the 60s, more studies were accumulating that found relatively low blood pressures--and especially no age-related increase among several populations in Africa (Kaufman & Hall, 2003).

Erik: Ah, so it couldn't have just been straight biology of race, then, right? Because if it was something inherent to black people in America, then it would have shown up in ancestral populations in West Africa as well....?

Jim: Right.

Jo: We saw last episode that Frank Livingstone had tried to undercut the race and sickle cell linkage in the 1950s and '60 by researching Africans in malarial environments. Is that what happened in the case of hypertension here, too?

Jim: In some ways, the story around race and hypertension is even more interesting. James P. Henry, a physiologist interested in how fluids move in organisms, teamed up with John Cassel, an epidemiologist, to publish a seminal paper laying out a model for the physiology of high blood pressure caused by what they termed "psychosocial factors" (Henry & Cassel, 1969). Focusing on what was perceived by western medicine as a normal increase in blood pressure throughout adult aging, they showed that that pattern is abnormal and associated with cultural disruption and changed behavioral expectations. I have a great quote from them.

Jo: Are you done stretching yet? If so, contractual obligations ...

Erik: "[the elevated blood pressure] does not depend on the presence or absence of a high state of technology and social sophistication, rather it appears to turn on the issue of whether the society or group has an established tradition with a social structure which remains unchallenged during the lifetime of the oldest subjects." Um, what?

Jo: Ah yes, I know this paper. What they were saying (and why it was so groundbreaking at the time) was that people's blood pressure increases as they age because the pace of cultural and technological change

creates extra stresses for those who are older. Not because we just get clogged arteries or weaker hearts or whatever as we age.

Erik: Oh, is this like where my daughter is super into snapchat and i don't even know what the heck it is and so I get really stressed?

Jo: Yup, it is. Only on a bigger scale. Like, think about my parents' generation. Your generation, Jim.

Jim: Hey, hey there--I'd be in your grandparents generation!

Jo: Right. You all were born when TV was just being invented. There was no internet. Certainly no wireless internet. No home computers. Definitely no smartphones. No podcasts, even.

Jim: And look at us now!

Jo: Yup, and unlike Jim, most people struggle to keep up with that much change in one lifetime, especially if they lack resources like education to help them adapt to it.

Erik: I'm struggling right now.

Jo: That was Henry and Cassel's hypothesis--that people's blood pressure increases as they age because the stress of adapting to large-scale cultural changes accumulates over time.

Erik: Alright. So by the mid-twentieth century we have some research pretty clearly stating that blood pressure is related to both biology and social life. And a suggestion that it's not related to race, even though it's higher in African than in white Americans. Guys, I gotta be honest. This doesn't sound like some super contentious race-fueled debate.

Jim: Oh, that's because we haven't talked about salt yet.

Erik: Salt. I like salt.

Jim: Yep, so does the rest of the world. And as you probably know, salt consumption is related to blood pressure.

Jo: Wait a minute. We didn't finish up with the race-hypertension-stress stuff.

Jim: Let's move on to salt now and get back to that later. I mean, if we're going chronologically here, the salt stuff is what came after Henry and Cassel. This stuff started in the 1970s

Jo: Alright, salt it is. Stress later. Stress and salt! I mean, salt and stress! Yay!

Jim: The salt stuff really accounts for some of the more egregious racist hyperbole in the late 20th century. Erik, this is where we're going to get into the real contention around race and blood pressure.

Erik: Alright, hit me.

Jim: So, remember, we already were beginning to understand by 1904 that salt was related to BP. We've since figured out, though, that salt influences BP through a variety of pathways primarily involving the kidneys. One thing that became clear as research on salt and BP accrued is that there is a tremendous range of variability between individuals in terms of how much impact salt intake has on BP.

Erik: Ok. I get that.

Jim: Then, in 1973, the anthropologist Lillian Gleibermann conducted a meta-analysis of blood pressure and salt intake among 27 populations. She confirmed that salt intake was affecting rates of hypertension, and that some African-Americans, notably those from Georgia and St. Kitts, appeared to be especially sensitive to salt intake, showing very high blood pressures for the level of salt in their diets (Gleibermann, 1973).

Erik: Hm ya ok. Interesting. Maybe related to stress of being black in the deep south, or in a former slave island.

Jim: Well, Gleibermann didn't think so. She went on to suggest that the African progenitors of North American slaves had limited access to salt so their bodies had to conserve it, setting them up to be sensitive to salt as it became more available.

Jo: this is the study where she failed to note that even though they had about the same salt consumption, the Africans from Liberia and Nigeria had lower blood pressure than either the black or white Americans, right? In other words, she ignored evidence that refuted her hypothesis, even though it was right there in front of her.

Jim: yep, that's the one. Then, later that same decade, physician Clarence Grim began studying BP-related salt sensitivity in African Americans. The racist aspect came into play when historian Thomas Wilson published his hypothesis about salt sensitivity in African Americans being related to certain features of North American slavery.

Jo: Oh yep. This is where it starts to get really interesting.

Jim: Wilson was trying to account for high blood pressure in US and Caribbean Blacks, but not in Africans in Africa (Wilson, 1986). He picked up on Gleibermann's notion of salt-limitation in African populations to make the argument that the slaves were pre-selected for salt retention.

Erik: This is about the same time that Jimmy "the Greek" Snyder was getting fired as a TV football analyst from CBS for spouting his theories about how slavery made Blacks superior athletes, remember that from our race and athletics episode way back when?

Jim: Right, but back to salt: Grim and Wilson worked together on what then became the Slavery Hypertension Hypothesis (SHH), publishing their big synthesis in the medical journal *Hypertension* in 1991 (Wilson & Grim, 1991).

Jo: Oh, I love teaching about this. Can I explain it?

Jim: Sure.

Jo: The Slavery Hypertension Hypothesis suggested that because the conditions for slaves during the Middle Passage were so harsh and dehydrating--with people getting all kinds of nasty gastrointestinal diseases, not to mention seasickness, not to mention the intense heat and limited supply of clean drinking water on slave ships--all those factors would have favored survival in individuals who were really good at retaining sodium in their blood, because they'd be less likely to die of dehydration than others who weren't so good at holding onto sodium.

Erik: So, like, a super-intense moment of natural selection according to Grim and Wilson, or what we would call a 'selection bottleneck'.

Jo: Yep. So then, West African slaves land in the eventual United States. Slavery happens, and that's yet another moment when being a salt-retainer would be advantageous because of the incredibly hard labor slaves were doing in hot climates.

Erik: This all seems logical.

Jo: Then emancipation happens, and as time goes on, people start eating lots of salt in their diets (and ever more with the rise of the industrial food system as salt became used to flavor and preserve our prepared foods). Suddenly, that fantastic ability to hold onto sodium is no longer good. In modern high-sodium diets, being someone who holds onto sodium in your body is actually a real problem, leading to high blood pressure.

Jim: And that, according to the Slavery Hypertension Hypothesis, is why we see such high levels of hypertension in present-day African-Americans compared to whites. It is logically appealing, right?

Erik: I sense you're about to pull the rug out from underneath me here, but I'm going to go ahead and say, "Yes, sounds good." Sounds maybe like something I heard on 60-Minutes back in the day or something.

Jim: The biggest problem was that there was no biological basis for it. But an almost-as-big problem was that it got completely misrepresented by the media. There was substantial reaction—after all, *Hypertension* is THE journal for blood pressure. A review article in a tropical medicine journal called the SHH "attractive." A JAMA news item reported on the SHH, under the headline "African Lineage, Hypertension Linked." The news item included the results of a study "that fits with the Grim hypothesis," concluding that "salt may be handled differently by blacks and whites." The New York Times covered it in the Medical Science Section under the headline, "Black hypertension may reflect other ills: outside factors may trigger genetic vulnerability." Newsday reported "Gene Linked to Hypertension," although

no gene had been found and the report was about a hypothetical gene Grim was dreaming up based on a twin study in Barbados. The LA Times said: “Researchers...have found a genetic link that may explain why blacks in the Western Hemisphere suffer abnormally from high blood pressure. A ‘salt retention’ gene or genes of African origin may be the culprit.” That this was an AFRICAN gene was also repeated in *Science News* under the title “The African Gene? Searching Through History for the Roots of Black Hypertension.” Popular science writer and UCLA physiologist Jared Diamond published a highly laudatory treatment of the SHH in *Natural History*, asking “What is it about American blacks that makes them disproportionately likely to develop hypertension and then to die of its consequences?”

Erik: So in other words, you’re saying the news media sensationalized and misrepresented the article?

Jim: Believe it or not...yes.

Jo: Shocking.

Jim: The push from the scientific and popular literature eventually led to the incorporation of the Slavery Hypertension Hypothesis in medical textbooks like *Pathophysiology of Hypertension in Blacks* (1993), *Textbook of Hypertension* (1994), *Clinical Hypertension* (1994), *The Cambridge World History of Food* (2000—chapter on sodium written by Wilson and Grim!), among others. And it continues to be treated in the scientific literature. Even earlier this year, the SHH was discussed in an article looking at possible gene mutations that might affect BP (Hoh, Abdul Rahman, & Yusoff, 2019). They offer the hypothesis as one possible avenue of genetic selection on systems that control blood pressure—without any critical evaluation, which is surprising since the only citation they offer is of a scathing critique of the SHH by anthropologist George Armelagos (Armelagos, 2005).

Erik: So I get that the news media sensationalized the Slavery Hypertension Hypothesis and then academics, smelling a quick publication, piled on. But was there evidence that it was wrong.

Jim: There was!. And you’ll love this, Erik. The most damning of the critical backlash against the article came not from a physician, not even from an anthropologist.....but from a historian.

Erik: So...historians started this mess and now you’re saying one helped debunk it?

Jim: Right. The historian was Philip Curtin, who studied the slave trade, and who was cited in the original Grim and Wilson article. He pointed out just a year after the Hypertension article was published that Grim and Wilson had made some major mistakes in tracing slaves to salt-poor origins in their African homelands, supposing that there was inadequate salt during the passage, and he suggested they had serious misapprehensions about mortality on the slave voyages (Curtin, 1992).

Jo: Anthropologist Fatimah Jackson criticized the SHH, too. She argued that in spite of a possible genetic bottleneck during the middle passage that may have increased the frequency of salt sensitivity initially, other parts of the passage and slavery experience likely worked against a simple genetic cause of increased rates of hypertension among modern African Americans (Jackson, 1991).

Jim: But the problem is the SHH has served as one of the main bases for considering blacks and whites as significantly biologically different, bolstering notions of racial essentialism (Kaufman & Hall, 2003).

Erik: Just like sickle cell.

Jim: Yup. And it really never has died.

Jo: Now, the question I always get at this juncture when I'm teaching about this stuff is: if it's not genes that are responsible for these big differences in BP between black and white groups in the US, what the heck is actually causing it? This is where I get to steer our ship back toward the literature on stress, race, and hypertension. Not that i'm biased. Not that I've done any work in this particular topic or anything.

Erik: Wait. Waiiit a minute. You ARE biased! You HAVE done work on this, haven't you?

Jo: Not as much as Jim has. Why don't you point the finger at him?

Erik: I point my finger at you, Jim!

Jim: Alright then. I will point my finger right back at you. Perhaps my middle finger.

Jo: Annnnnnyyyway, so there has been a renewed interest in the study of blood pressure in anthropology in the last 20 years or so, especially since medical anthropologists have started really paying attention en masse to questions about how racial health disparities get perpetuated by discriminatory structures. That literature points to several pathways through which racial discrimination harms wellbeing. Some of our colleagues in the anthro department at Alabama break this up into 5 pathways (Dressler, Oths, & Gravlee, 2005), but I like to think about it as three. That's just a matter of how my brain works.

Erik: Which three?

Jo: In my mind, the first is a direct pathway involving basic access to resources that can support or harm health, like healthy food and medical care. This one has to do with socioeconomic status and where you live. If you're part of a discriminated-against racial group, then you're less likely to have access to good medical care and healthy food and green space to exercise and maybe money to pay for the gym, and all that other stuff.

Erik: So, social and economic discrimination is pathway #1. Seems pretty straightforward.

Jo: It is, relatively speaking. For instance, we have amassed TONS about how the neighborhood you live in shapes life chances. A Harvard team of sociologists published a study in 2015 that looked at more than 5 million families who had moved across counties, and it found that children who had moved from lower-income areas did much better on key life indicators like adult income, college attendance, teenage pregnancy, and marriage than their counterparts who had not moved (Chetty & Hendren, 2018). The same year, there was another important study done by a group at Stanford that found that black and hispanic families needed to have higher incomes than white families in order to live in upper-middle-class

neighborhoods--so in other words, there was a steeper barrier for racial minority families to get into the neighborhoods where they'd be most likely to have access to the resources that predict adult success and health (Reardon, Fox, & Townsend, 2014). All of that stuff directly shapes health, so it's probably pretty easy to see how those questions of access and race get translated into things like blood pressure problems.

Erik: Yup, that definitely makes sense. What's the second pathway?

Jo: The second is an internalized discrimination pathway, involving the health-harming effects of self-stigma on life chances including health but other things as well, such as educational attainment.

Erik: Wait what?

Jo: What I mean is that there's been a bunch of work in psychology and sociology showing that people who are discriminated against tend to internalize that stigma and, to some extent, believe the terrible things other people say about their inferiority (Clark & Clark, 1950). When I teach about this, students are particularly struck by the results of the so-called "Doll Test", an experiment first conducted by African American psychologists Kenneth and Mamie Clark in the 1940s.

Erik: Oh, I know this one. This is the one that presented children with black and white dolls, then asked them a series of questions like, "Which doll is the good doll? Which is the nice doll? Which is the ugly doll?" etc.

Jim: Yeah, we talked about this in [episode 3 of our Race and IQ series](#). It's the study that shows up in the notorious footnote 11 of *Brown vs. Board of Education* (Warren, 1954).

Jo: That's right. Children across the board--black or white or otherwise--very consistently responded that the white doll was nice, good, pretty, etc. This experiment has been repeated over and over, and it really poignantly demonstrated how children, even at a young age, internalize very, very negative ideas about darker-skinned people--even when they themselves are darker skinned. That's why it was used in *Brown v. Board* to demonstrate that racial segregation leaves psychological damage that hurts young minds.

Erik: Man that is depressing.

Jo: Yup. Since then, we've developed ways of measuring how much a person has internalized racist ideas, and we have learned that the more a racial minority individual believes in racist ideas, the worse off they fare on a range of physical and mental health outcomes.

Erik: OK. so self-stigma is the second pathway. What's the third?

Jo: The third is a pathway involving chronically active stress responses to external discrimination, which erodes health over time. There's been a lot of work looking at how humans respond to stress. You've probably heard of the fight-or-flight mechanism, right? That's an adrenaline-mediated stress response, and it's supposed to produce a short term burst of energy in us so we can escape from a predator or some other imminent danger. Then it's supposed to go away. It is NOT supposed to be active all the time.

That's because it taxes our bodies a lot. It slows down our digestion, puts a surge of blood sugar into our bloodstream in case we need quick energy to get away from danger. It essentially puts most of our basic systems on "hold" so we can focus on escaping...whatever. So it's supposed to be temporary.

Erik: Supposed to be, eh?

Jo: Ya. But in our busy stressed out modern lives, those responses are often activated way too often, and for way too long. And the activation of those stress hormones (especially if it is frequent or continuous, as it often is for racial minorities) contributes directly to things like increased fat storage which can lead to obesity; deposits of plaque in the arteries that can lead to heart failure; higher blood sugar that can lead to diabetes; shortened telomeres that can speed up aging; and--guess what?

Erik: Um. I'm going to guess, given what we're talking about here,hypertension?

Jim: Ding ding ding!

Jo: Yup, that's right--higher BP. In the literature, this process is referred to as "weathering". The body actually "wears out" more quickly when it's stressed like this all the time. And that's at least part of the mechanism underlying higher blood pressure among African Americans as opposed to whites.

Jim: Work in the last two or three decades--mostly done in anthropology actually (again I'm biased)--has been using a mix of research approaches to try to trace exactly how experiences of discrimination might lead to this kind of weathering. Lance Gravlee, an anthropologist at the U of FL, has found that in Puerto Rico, it's not your actual skin color (that is, the amount of melanin you have in your skin, which we can measure directly), and it's not your genetic ancestry markers (like the ones used by 23andMe) that predict whether or not you're likely to have high BP. Instead, it's your socially-assigned race that shapes how likely you are to have higher BP (Gravlee, Non, & Mulligan, 2009). That might not sound particularly earth shattering, but let me break it down for you.

Erik: OK

Jim: We usually think of this thing called "race" as being about skin color and genetics, right?

Erik: well, WE don't on this here podcast. But people do, yes.

Jim: Right. That's a common lay understanding of the term. Gravlee's research is telling us it's not physical appearance or genetics that determines BP. Instead, it's how other people treat you--how OTHER people see your race. So if people look at you and think of a low-status race group, they'll treat you differently than they would if you were a higher-status race group. They might act mistrustful, or make it hard for you to get a bank loan, or follow you around in a store, or any number of other things.

Jo: Our own UA's Bill Dressler has spent his career studying how structural barriers that make it hard for people to attain cultural standards of "success" (like the "house with the white picket fence" ideal in America) are related to blood pressure, depression, and other health problems, even after you control for a

person's actual socioeconomic status. His work is primarily in Brazil, but others have replicated these findings all over the world...

Jim: Including Tuscaloosa and American Samoa where we collaborated on this...

Jo: In other words, plain old discrimination, all by itself, has important effects on blood pressure.

Erik: OK. so we have stress, we have discrimination, and we have these three different ways that discrimination can have really strong effects on health.

Jim: Yes. To me, this work is telling us some important things that relate all the way back to the stuff we were talking about at the beginning of today's episode. First, it's not a person's race per se that shapes their BP, but instead how other people treat them based on what they perceive about their race. And those negative ideas do in fact permeate back into the consciousness of discriminated-against people in damaging ways. Second, experiences of discrimination raise BP because they're really stressful every single day. Together these studies are telling us that it's the discrimination of other people--and the resultant limitations on life chances--that are related to BP.

Jo: More recent work by Gravlee and his colleagues suggests that even hearing about someone ELSE you care about being discriminated against can be enough to affect your physical and mental health, even if it's not happening directly to you. He calls that "vicarious racism."

Erik: Well, that sounds like a good catch-phrase to end on.

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