Podcast Interview: Brad Greenwood

PNAS: Welcome to Science Sessions, the podcast of the Proceedings of the National Academy of Sciences, where we connect you with Academy members, researchers, and policymakers. Join us as we explore the stories behind the science. I'm Paul Gabrielsen, and I'm speaking with Brad Greenwood of George Mason University. In a recent PNAS study, he and his colleagues looked at the effects of racial concordance in the physician–patient relationship, particularly in the context of childbirth. For making a significant contribution to their field, the study was awarded a 2020 Cozzarelli Prize in Behavioral and Social Sciences.

Brad, how did you become interested in patient–physician racial concordance?

Greenwood: Concordance, broadly, is a shared ascriptive trait. Racial concordance means that I share racial traits with another person. So, a confluence of things kind of led to the origins of this paper. A few years ago, Laura Huang and I, along with Seth Carnahan, wrote a paper on gender concordance and how that affects patient outcomes, specifically how it affects survival from female heart attacks. When I was at the University of Minnesota, one of my colleagues there is a guy named Aaron Sojourner, who's also a coauthor on the paper. He presented some really interesting work on shared benefits in the classroom. And we eventually met Rachel Hardeman, who is a titan of health equity research. One place where we have particularly daunting outcomes is in birthing, specifically for Black moms and for Black newborns. We have this literature that seems to suggest that if you have shared ascriptive traits, there are often benefits that manifest specifically for social outgroups. So, is it possible that these two things can actually click together?

PNAS: Tell us about the racial disparity in infant mortality.

Greenwood: The likelihood of a newborn perishing when they are Black is off the charts larger in the United States as compared with White newborns. And there's a lot of reasons for that. So, there is this hypothesis of cumulative weathering, there's access to neonatal care, access to proper care during the delivery process, higher rates of eclampsia and preeclampsia. We find that the mortality rate is three times higher among Black newborns than White newborns, just a priori.

PNAS: What did we know about the effects of racial concordance before your study?

Greenwood: The idea that concordance has a benefit has been examined in a lot of different places. We know that there are benefits of female leadership for young women who are working at firms. There's a significant amount of work looking at defendants and how they pair with judges. And increasingly, there's been some work which is dedicated to this question in medicine. So, racial concordance has been shown to increase healthcare utilization. So, whether or not people actually go to see the doctor, compliance, willingness to participate in
preventative screenings, increases rapport. You have increased comfort, usually increased compliance with suggestions made by the medical professional and an increased ability to communicate, which just usually leads to better diagnosis.

**PNAS**: Tell us about your dataset.

**Greenwood**: The data that we use[d] came from the Florida Agency for Health Care Administration, AHCA, some data that I've been working with for a while. So, what it gives us access to is a census of inpatients, women who have been admitted to the hospital and newborns, between 1992 and quarter three of 2015. So, what we're able to do is see not just the patient information on them—their comorbidities, gender, race, et cetera—we also have information on who the attending physician of note is.

And so, if the patient expires, we're able to observe that directly. So, basically, what we set up is a fixed effect model where the outcome is whether or not the patient lives or dies. And then the IVs of interest are the physician race, patient race, and the interaction between those two, using only Black and White patients just to make it simpler. And then fixed effect out the remainder of the things that we think might be going on. So, including controls for the insurance provider, including controls for time.

So, maybe there's selection on who the newborn is seeing. We want to partial out hospital heterogeneity, right? So, Black patients may have systematically different access to hospitals than White patients.

**PNAS**: What did you find? What were the effects of racial concordance on infant mortality?

**Greenwood**: Essentially, what we find is that there is this penalty, which a lot of other researchers have observed. The penalty that Black newborns experience is cut in half when their attending of record is also Black, when they share race, and we don't see that same benefit for White newborns which leads to a couple of questions like: Why? These findings don't really tell us why this is happening. And I think that's why there needs to be additional work diving into this question.

The interesting thing is that it shows up under some kind of interesting circumstances. One is that it shows up more when cases get more complicated. We also find that the effect is much stronger in locations that deliver a lot of Black newborns.

Beyond those two moderating effects, this basic relationship is surprisingly robust; you see it among pediatricians, among nonpediatricians. Could this simply be a function of the physician’s gender? Same thing across male and female physicians. So, it's kind of striking how persistent the relationship between these things is.

**PNAS**: What were the effects on maternal mortality?

**Greenwood**: For the birthing mothers, again, we see really no difference in performance across Black and White physicians generally, which is encouraging. But we also see, as prior work has as well, that Black mothers are far more likely to perish during childbirth than White mothers are. Even when conditioned upon controls.
What's relatively striking though, is that we see no concordance benefit in that situation. There are a slew of potential explanations. So, it could be that mothers are better able to select their physician. And are more likely to be comfortable with them. It's an order of magnitude difference, the mortality rate for newborns and mothers, mothers simply being more robust than a newborn. So, you don't have patient expiration as frequent.

**PNAS:** Why might racial concordance produce these effects for infant mortality?

**Greenwood:** I cannot say this clearly enough—we cannot observe mechanism. But extant research provides us with a couple of reasons why. We want to be very careful not to pathologize Black newborns, but there is significant evidence of cumulative weathering, socioeconomic disadvantages that this group is far more likely to suffer. And Black physicians may simply be more aware and attuned than White physicians in dealing with that. That's a possibility. But there is research that suggests that spontaneous racial bias manifests towards both newborns and adults. So, it could be that there is an inefficient allocation of resources or more attention is paid to one newborn versus another, if there's lacking resources.

It's unlikely that the infant themselves is communicating. I remember when my daughter was born, screaming and that's just about it. But to the extent that concordance does increase trust and communication, there may be a better sharing of information between the mother and the pediatrician who's caring for the child immediately afterwards. There's like this cornucopia of potential explanations.

One thing that usually comes up about this time in the conversation is, like, “Okay, well, this suggests that Black moms should only have their babies be treated by Black doctors and vice versa for Whites.” And I think that that is worst possible interpretation of the paper.

Any person should be able to go into any hospital, in these United States, and receive equal treatment. This is why more work needs to keep happening in this space, because this isn't the first paper in this area. And I really hope it's not the last paper in this area. We need to continue to build these competencies, [and] figure out why this stuff happens.

**PNAS:** What can the American health care system do to close the racial infant mortality gap?

**Greenwood:** Okay. So, I think there's a couple of things. So, the one we already mentioned, probably what you shouldn't do, [is] bifurcating the medical system based on race, which just doesn't solve the problem. There's always things like antibias and antiracism training. And it's good. I think the question also comes down to knowledge generation. So, making sure that the knowledge generation process is more representative is an important thing. We want to continue the diversification that's happened within the medical force, which is a wonderful thing that's happened.

And we want to make sure that continues to go on. We want to make sure that the knowledge these physicians are getting is based on the diverse set of patients that they will be treating.
What's the research directions that we want to go? I think those are really interesting too. Are Black doctors systematically treating their patients in a different way than White doctors are? And if so, what practices are those?

And again, that's not to indict any of the docs. This is the nature of practicing medicine. We find out what's doing really, really well, and we make sure that that information gets into other people's hands.

A couple of people have asked, should I choose my doctor exclusively based on their race then? Which I think is a little bit of a different question than this administrative policy, which funnels this way. And it's one that we usually advise against because there are super high performing White doctors and Black doctors and underperforming Black doctors and White doctors.

The quality spectrum is huge, right? So, it's not really an efficient selection criterion if you just go in sight unseen, you're like, “I'm just going to choose this doctor because of their race.” That being said, another thing that's really important is your comfort with your physician. If you believe that you have a great doc and you can communicate with them, that's the most important thing. And if you feel like you can't communicate with your doc because of something about them, then you can ask for another physician. And I think being careful and being cognizant of the relationship between the provider and the patient, I think, is something that all patients want to do.

**PNAS:** How did you feel when you heard your paper had been awarded a Cozzarelli Prize?

**Greenwood:** I did not believe the email. I was stunned. It was a very humbling experience. I was shocked and then I called everybody and everybody else was shocked too. So, it's nice. It's really rewarding when the work gets recognized. I just, I hope we can figure out the actual problem now.

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