

TESTOSTERONE

AN
UNAUTHORIZED
BIOGRAPHY

Rebecca M. Jordan-Young | Katrina Karkazis

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Diana Rose Newby //

Why has COVID-19 killed more men than women? As the novel coronavirus SARS-CoV-2 continues its global spread, infection patterns and fatality rates have prompted this question both among medical experts and in the popular media. As of late April, data confirmed this disparity in multiple regions of the world: in China, men are 1.65 times more likely to die from COVID, while in

New York City, the fatality rate among men is 1.77 times higher than among women (Rossman). And across news networks ranging from *The Conversation* to the *Daily Mail*, fingers are being pointed at one potential culprit: testosterone.

At first blush, that conclusion might seem intuitive. Broadly defined as the male sex hormone, testosterone, or T, is often seen as precisely what makes men *men*; on this view, it must be the crux of any sex-based difference. What's more, a number of studies suggest that testosterone has an immunosuppressive function.[1] In turn, this literature has been cited by news writers hoping to account for the sex-based disparity in COVID fatalities. Although antibody tests have not yet “proved reliable” in confirming testosterone’s culpability, as *Daily Mail* writers Jo MacFarlane and Eve Simmons admit, they muse that such confirmation might offer “[p]roof ... that man flu may not be a myth after all.”

If reporting like this is a little funny, it’s also pretty misleading. For one, the jury is still out as to whether testosterone’s role in the immune system is purely that of a suppressant; the likelier scenario is that its function is more complicated, contingent on a variety of factors that still aren’t fully understood. For another, one of the recent studies that has been cited as offering evidence of a direct link between T and coronavirus in fact does nothing of the kind.

In April 2020, an oncology research team published a paper that studies susceptibility to COVID among cancer and non-cancer patients in Veneto, Italy. The authors found that androgen-deprivation therapies (ADT) reduced the risk of SARS-CoV-2 infection in men with prostate cancer, prompting *Fortune* to run an article titled “Therapy to reduce men’s testosterone seen as promising coronavirus treatment.” *Fortune*’s headline is obviously compelling, but it also jumps the gun. This study considers androgens generally and doesn’t once mention testosterone by name; androgens, it’s worth noting, are produced by all bodies, not just “men’s”; the study finds only an indirect link between COVID and androgens, which regulate the transcription of a particular protein that seems to be the real cause of “increased susceptibility of men” to SARS-CoV-2; and it further concludes that other steroid hormones, including estrogen, might also enhance that protein’s expression (Montopoli et al). In short, testosterone is just one small piece in the complicated puzzle of coronavirus infection trends.

So what exactly is going on here? Why has testosterone been so insistently tied to the spread of a disease that it may not directly or exclusively affect? Answers to these questions might be found in *Testosterone: An Unauthorized Biography* (Harvard UP, 2019). A recent work of groundbreaking social-scientific archaeology by Rebecca Jordan-Young and Katrina Karkazis, *Testosterone* digs up decades of dirt on T, reexamining the scientific literature and cultural narratives that have conspired to bring T’s “authorized biography” into being.

The standard account of testosterone, as Jordan-Young and Karkazis convincingly demonstrate, is fueled at all turns by a potent cocktail of dubious data, acrobatic analytics, and persistent social stereotypes. They call this combination “T talk,” designating a “web of direct claims and indirect associations” that “weaves folklore into science, as scientific claims about T seemingly validate

cultural beliefs about the structure of masculinity and the ‘natural’ relationship between women and men” (10). The problem with these claims and beliefs, of course, is that they’re frequently ill-founded, misguided, or just plain wrong.

Some of the first T myths that Jordan-Young and Karkazis debunk are also the most fundamental. One involves the “sex hormone concept,” the widely accepted “fact” that testosterone is the male sex hormone and estrogen its opposing female counterpart (10). This concept has been invalidated by abundant research proving, for starters, that female bodies naturally produce T—and that male bodies generate estrogen as well. What’s more, Jordan-Young and Karkazis challenge the very idea that there is any *one* testosterone. “T as a singular chemical structure exists only in the abstract,” they propose: not only can it be found throughout all human bodies, but it’s also in perpetual flux, a different molecule altogether depending on a range of criteria—where it’s present in the body, the time of day, where the subject lives, their health, their age. Far from the monolithic entity it’s so often made out to be, T is a fluid and inconsistent “multiplicity” (25).

Jordan-Young and Karkazis are hardly the first scholars to undermine these particular takes on testosterone. The real originality of *Testosterone* lies ahead, in their systematic takedown of other persistent myths about T. Dedicating each chapter to a different facet of T’s familiar narrative—from reproduction, violence, and power to risk-taking, parenting, and athleticism—the authors show how discourse on T became crowded with “zombie facts”: unsubstantiated yet indestructible ideas “that seemingly can’t be killed with new research or even new models that would make old research irrelevant or subject to new interpretations” (54). In other words, they aren’t just interested in telling readers that we’ve gotten T all wrong; more importantly, they want to show us *how* the story went awry—and why.

To get there, Jordan-Young and Karkazis model a methodology they call “[k]eeping your eye on T” (96). Tracing each “zombie fact” to its genesis in decades-old studies, the authors follow its progress across generations of scientific inheritance. At every stage of this lifespan, the authors point to the disciplinary practices that have helped consolidate a generally reductive understanding of T as “a synecdoche for masculinity” (10), a hormone that “increases risk-taking” (132), a kind of “‘jet fuel’ for athletes” (198), and a driver of “violent crime” (54).

What emerges from their careful dot-connecting is a fairly damning portrait of over thirty years of mainstream research on testosterone. Time and again, the studies that Jordan-Young and Karkazis dissect follow the same troubling patterns, tweaking methods and “p-hacking” (or manipulating data) in order to produce desired yet ultimately deceptive conclusions. Hormone researchers seem to have repeatedly subscribed to what Jordan-Young and Karkazis call the “Mulder effect”: likened to the eponymous alien-truther *X-Files* character, these scientists have simply “wanted to believe” certain pre-given stories about T (60).

As it turns out, those stories are often deeply problematic—not merely because belief in them is ill-gotten, but also because they tend to reinforce classist, racist, and sexist stereotypes, whether unwittingly or otherwise. Multiple influential studies, for instance, have drawn unfounded

connections between high T and not only general criminality and aggression, but also lower social class (Jordan-Young and Karkazis 111-112). In turn, these associations are leveraged in service of “essentialist frames that hitch aggression”—and, it follows, a biological propensity for violent crime—to specific human groups: males in general, working-class people, and people of color” (Jordan-Young and Karkazis 79). On the whole, *Testosterone* presents a timely indictment of not just the “mechanism[s] of ignorance” that have driven research on T, but also the broader complicitness of biomedical sciences in the proliferation and maintenance of regressive and oppressive norms (49).

And this is primarily how the book has been received so far. In the half-year or so since its publication, *Testosterone* has been reviewed in a number of scientific venues—including *Nature*, *Science*, and the *Medical Anthropology Quarterly*—and celebrated as both a “fresh perspective” on endocrinology (Epstein) and a crucial “critique of major work in biology and chemistry” (Gutmann). Obviously this praise is well earned; yet it also misses a significant element of *Testosterone*’s intervention. As Jordan-Young and Karkazis tell it, T’s story hasn’t spiraled simply as a product of scientific practices. The causes are also cultural: T is a social molecule, and its mythos heavily draws from social influences.

Consider, for example, “power posing.” The central exhibit of *Testosterone*’s fourth chapter, “Power,” this so-called life hack landed in the public spotlight in 2012, when social psychologist Amy Cuddy delivered a TED talk titled “Your Body Language May Shape Who You Are.” On the basis of a 2010 paper co-authored by Cuddy, Dana Carney, and Andy Yap, the talk argued that when we assume “power poses” like the classic Wonder Woman stance, we actually *become* more powerful—we raise our testosterone. By this point in *Testosterone*, the canny reader can readily predict the punch-line: both Cuddy’s talk and the 2010 study are basically bunk. They draw unsubstantiated connections between animal and human dominance behaviors; they problematically conflate these behaviors with social status; and they misrepresent the study’s highly inconsistent findings about T (Jordan-Young and Karkazis 88). And in an instance of intradisciplinary backlash that appears rare in the greater scheme of *Testosterone*’s retold history, Cuddy and her colleagues were roundly castigated by the scientific community.

This censure, however, did not prevent power posing from becoming a cultural phenomenon. “Your Body Language May Shape Who You Are” remains the second most-watched TED talk of all time—with over 57 million views and counting—and it crowns round-up lists like “Top 10 TED talks that’ll change your life.” Viewers still flood the video’s comment thread with gratitude for its “life-changing” implications; just within the last three months, this feedback has included:

Our bodies change our minds

Our minds change our behaviors

Our behaviors change our lives.

I’ve learned so much about body language. I didn’t expect such a small difference can effect on how we feel and how we look on the outside. The hormone change was so interesting. 2

minutes can change the atmosphere around us in an important interview. I'll definitely try this gestures.

Its like science class.[2]

The popular reception of Cuddy's ideas shores up the reciprocal relationship of scientific and social mythologizing around T. Part of the culpability certainly falls on experts like Cuddy and their breed of scientism, which "encourages us to seed narratives that are far afield from research"—like the idea of power posing—"with science-y details that make them seem more alive, plausible, and engaging" (Jordan-Young and Karkazis 132). At the same time, the sheer pervasiveness of scientism is due in large part to the media consumption of the non-expert public. Just as people loved *The Secret*, which conjured the science-y "Law of Attraction" whereby individual success can be gained through sheer desire and will, many feel compelled by the possibility (particularly when it's dressed up "like science class") that a simple adjustment in self-presentation will help them harness the raw power of T and get that promotion, that date, that brand new life.

Moreover, the fascination with power posing also points to the fulcrum on which the social-scientific exchange perpetually turns. It's the media itself: the talk shows and news engines and culture blogs that feed the myth-making machine. And when has scientism in the media been more evident than during the coronavirus age? In the two months since it was formally declared a pandemic, the progress of COVID-19 has been accompanied by an endless stream of information and speculation about the disease's origins, transmission, symptomatology, social impact, and its very reality. Against the backdrop of multiple conspiracy theories related to the virus—many of which are not only implausible but patently racist to boot—the specious suggestion that testosterone might be singularly to blame for disproportionate male fatalities is comparatively innocuous. Nevertheless, the circulation of this idea highlights the role of mass media in perpetuating science-y myths with material implications for embodied life.

"Keeping your eye on T" therefore paves the way to a bigger question about the ethics of knowledge production at the junction of science and society. Jordan-Young and Karkazis give shape to a version of this question in their conclusion to "Parenting," a chapter in which they "opted," as the authors put it, "to write about a number of egregiously racist studies" (158). In a characteristically self-reflexive gesture, they acknowledge the "challenges" they confronted in this choice:

Whether a citation is laudatory or outright condemnation, it underscores the importance of a piece of writing by showing that others have taken it seriously enough to engage with it. Links across studies lend each other mutual support, reinforcing the 'fact value' of each through citation. ... As scholars, we need better strategies for responsibly identifying problematic work without adding to its fact value. (158)

The dilemma of how to identify and discuss "problematic work" in a way that avoids "reinforcing the 'fact value'" of the work itself is an open problem not just for Jordan-Young and Karkazis but for their fellow "scholars" as well. This is perhaps one of the book's more important takeaways for

other researchers in the scientific community, who make up a major and clearly targeted subset of *Testosterone's* readership.

But this dilemma is also relevant to the book's other readers: non-experts who don't have membership in that community but want to learn more. Although dense and occasionally technical to a degree that these readers might find tedious, *Testosterone* strikes me as very much conceived with interdisciplinarity and accessibility in mind. For one, neologisms like "T talk," "zombie facts," and "the Mulder effect" are useful signposts for navigating the authors' more opaque and jargony discussions. For another, the ubiquitous theme of myth-making will resonate with anyone interested in the power of stories to illuminate or, equally, to deceive: a power we're confronted with daily, as the story of coronavirus twists and turns in horrifying ways.

The dilemma that *Testosterone* names is thus a dilemma we all face as active participants in both the consumption and the circulation of the coronavirus story as it unfolds. Experts or otherwise, "we need better strategies for responsibly identifying problematic work without adding to its fact value." What exactly are these strategies? I'm not sure I have the answers, and neither do Jordan-Young and Karkazis. But the project of creating them has become an increasingly urgent one, and it's an effort in which everyone can—and should—share.

[1] See Furman et al. (2014); Trigunaite, Dimo & Jørgensen (2015).

[2] Comments are excerpted from the comment thread for Cuddy (2012).

Image Source: Science

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