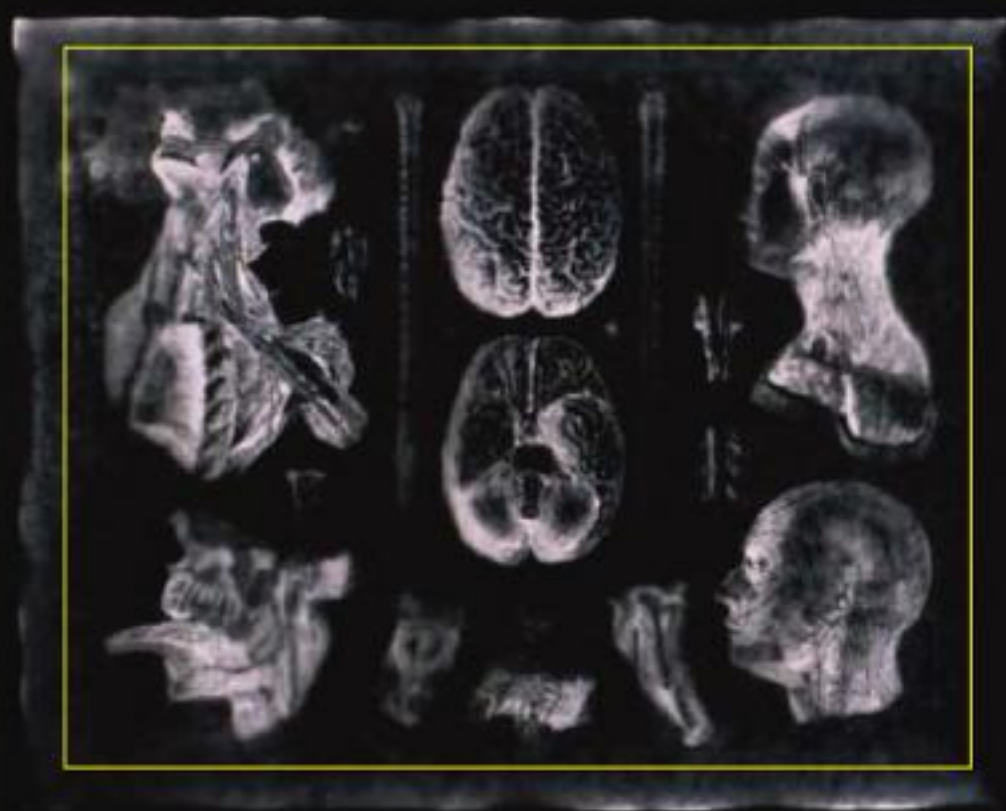


REBECCA M. JORDAN-YOUNG

BRAINSTORM



THE FLAWS IN

THE SCIENCE OF

SEX DIFFERENCES

Brain Storm: The Flaws in the Science of Sex Differences, Rebecca M. Jordan-Young, Harvard University Press, 2011, 0674058798, 9780674058798, 408 pages. Jordan-Young has written a stunning book that demolishes most of the science associated with the dominant paradigm of the development of sex and gender identity, behavior, and orientation. The current paradigm, brain organization theory, proposes: "Because of early exposure to different sex hormones, males and females have different brains"; and these hormones also create "gay" and "straight" brains. Jordan-Young interviewed virtually every major researcher in the field and reviewed hundreds of published scientific papers. Her conclusion: "Brain organization theory is little more than an elaboration of longstanding folk tales about antagonistic male and female essences and how they connect to antagonistic male and female natures." She explains, in exquisite detail, the flaws in the underlying science, from experimental designs that make no statistical sense to "conceptually sloppy" definitions of male and female sexuality, contradictory results, and the social construction of normality. Her conclusion that the patterns we see are far more complicated than previously believed and due to a wider range of variables will shake up the research community and alter public perception..

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Sexual Orientation: Toward Biological Understanding, Issue 4 Toward Biological Understanding, Lee Ellis, 1997, Psychology, 276 pages. An exploration of what is currently known about genetic, hormonal, and neurological causes of variations in sexual orientation in both humans and other species..

Psychosomatic Feminism and the Neurological Body, Elizabeth A. Wilson, May 26, 2004, Psychology, 125 pages. DIVHow can scientific theories contribute to contemporary accounts of embodiment in the humanities and social sciences? In particular, how does neuroscientific research

Brain Gender , Behavioural Neuroendocrinology Research Unit City University Melissa Hines Professor of Psychology and Director, London, Oct 30, 2003, Medical, 336 pages. Do biological factors, such as gonadal hormones, determine our sexual destiny after our genes are in place? Do they make men aggressive, or women nurturing? Do they cause boys

Digit Ratio A Pointer to Fertility, Behavior, and Health, John T. Manning, Jan 1, 2002, Science, 173 pages. Could the length of your fingers indicate a predisposition to breast cancer? Or musical genius? Or homosexuality? In Digit Ratio, John T. Manning posits that relative lengths

Sex differences in the Human Brain , , Dec 3, 2010, Medical, 216 pages. This volume of Progress in Brain Research documents recent developments and research findings in relation to sex and how the brain's function and behavior differs from men to

Psychology of gender identity an international perspective, Kam-Shing Yip, Apr 18, 2006, Social Science, 263 pages. Gender encompasses biological sex but extends beyond it to the socially prescribed roles deemed appropriate for each sex by the culture in which we live. The gender roles we

Delusions of Gender: How Our Minds, Society, and Neurosexism Create Difference , Cordelia Fine, Aug 30, 2010, Social Science, 338 pages. Fine's sharp tongue is tempered with humor. . . . Read this book and see how complex and fascinating the whole issue is. The New York Times It's the twenty-first century

Who Stole Feminism? How Women Have Betrayed Women, Christina Hoff Sommers, 1994, Social Science, 320 pages. Challenging currently accepted beliefs that have spurred the feminist movement, a heated examination challenges the integrity of feminist efforts and cites flaws in the common

The Sexual Spectrum Exploring Human Diversity, Olive Skene Johnson, 2004, Psychology, 277

pages. Questions of sexuality and gender are in the forefront of public discourse. Every day there are stories in the newspaper about same-sex marriage, gay and lesbian parenting, and

The evolution of woman an inquiry into the dogma of her inferiority to man, Eliza Burt Gamble, 1894, Psychology, 356 pages. .

Brain Storm , Rich, Sep 1, 2004, , . No matter what you do for a living or where your personal interests lie, you can become more successful and achieve greater heights if you re willing to pop the top on your

Female and male brains are different, thanks to hormones coursing through the brain before birth. That’s taught as fact in psychology textbooks, academic journals, and bestselling books. And these hardwired differences explain everything from sexual orientation to gender identity, to why there aren’t more women physicists or more stay-at-home dads.

In this compelling book, Rebecca Jordan-Young takes on the evidence that sex differences are hardwired into the brain. Analyzing virtually all published research that supports the claims of “human brain organization theory,” Jordan-Young reveals how often these studies fail the standards of science. Even if careful researchers point out the limits of their own studies, other researchers and journalists can easily ignore them because brain organization theory just sounds so right. But if a series of methodological weaknesses, questionable assumptions, inconsistent definitions, and enormous gaps between ambiguous findings and grand conclusions have accumulated through the years, then science isn’t scientific at all.

Elegantly written, this book argues passionately that the analysis of gender differences deserves far more rigorous, biologically sophisticated science. “The evidence for hormonal sex differentiation of the human brain better resembles a hodge-podge pile than a solid structure…Once we have cleared the rubble, we can begin to build newer, more scientific stories about human development.”

I'm the ideal test reader for Brain Storm. I've always had reservations about the sweeping claims that there are fundamental differences in the organization of male and female brains, caused by prenatal hormones. But the sheer number of published studies that seemed to give incontrovertible evidence led me to assume that the theory was sound. This elegantly written and fascinating book has changed my mind. Jordan-Young's comprehensive analysis of the array of conflicting results and methodological weaknesses shows that we have closed the book on this topic far too soon. Her warning is one that all scientists can agree with: Careful!

This important and intellectually powerful book shows that a dominant paradigm in human sex differences is held together by chewing gum. By painstakingly examining a large and contradictory literature, Jordan-Young shows the weakness of the brain organization hypothesis. She has so much respect for the scientific method that she can hope that reason and integrity will help create a better, more empirically sound theory of sex differences, and she reaches out to scientists to offer a glimpse of a new psychobiology.

This is a book of remarkable depth that sets a new standard for clear scientific thinking about complex behavioral traits, as well as for interdisciplinary scholarship. Rebecca Jordan-Young charts a fresh new course through the morass of questions about gender and sexuality with enviable humor, fairness, and intellectual power.

Jordan-Young has written a stunning book that demolishes most of the science associated with the dominant paradigm of the development of sex and gender identity, behavior, and orientation. The current paradigm, brain organization theory, proposes: "Because of early exposure to different sex hormones, males and females have different brains"; and these hormones also create "gay" and "straight" brains. Jordan-Young interviewed virtually every major researcher in the field and reviewed hundreds of published scientific papers. Her conclusion: "Brain organization theory is little

more than an elaboration of longstanding folk tales about antagonistic male and female essences and how they connect to antagonistic male and female natures." She explains, in exquisite detail, the flaws in the underlying science, from experimental designs that make no statistical sense to "conceptually sloppy" definitions of male and female sexuality, contradictory results, and the social construction of normality. Her conclusion that the patterns we see are far more complicated than previously believed and due to a wider range of variables will shake up the research community and alter public perception. (Publishers Weekly (starred review) 2010-07-12)

It was with appreciation verging on glee that I read Barnard professor Rebecca Jordan-Young's devastatingly smart and definitive critique: *Brain Storm: The Flaws in the Science of Sex Differences*. Jordan-Young argues that the science of prenatal hormones, gender, and the mind "better resembles a hodgepodge pile than a solid structure." And she knows of what she speaks. An expert on measures and study designs, Jordan-Young has spent the last 13 years combing the literature on brain organization, unpacking assumptions, questioning methods and statistical practices, holding one paper up against another. She stresses that fetal hormones must matter to the brain--somehow. But after picking apart more than 400 studies that try to understand the genesis of particular psychological sex differences (real or supposed), she concludes that fetal T looks like an awfully anemic explanation...After decades of determined research, if robust links between prenatal hormones and "male" or "female" minds really exist, shouldn't we see those links across lots of different kinds of studies? This matters because the obsession with prenatal T can easily become a distraction. It can make us forget how much gender norms have changed--think of all those female accountants, lawyers, and doctors who weren't around 50 or even 30 years ago--and how remarkably similar men's and women's brains and minds actually are. All this unwarranted hammering away at difference (and its putative explanations) causes real trouble, too. As a growing body of research shows, cues that foreground gender and bring stereotypes to mind can dampen men's performance on tests of social sensitivity, women's scores on math tests, and women's stated interest in quantitative pursuits. Jordan-Young has done an enormous amount of work to untangle the gender claims. We ought to read her, cite her, thank her. And then, let's move on.

In her exhaustive survey of the literature, Jordan-Young discovers a hodge-podge of tiny samples, inadequate controls, conflicting data and extravagant conclusions...By meticulously revealing the flawed research behind brain organization theory, she opens the way to a non-hierarchical study of sex difference that will be both more fruitful for science and less damaging for society.

As a layperson, I found the reading slightly difficult. Not because of the author's writing style, which is excellent given the material, but because it's not your typical pop-science, easy read. You can't sneak in a few chapters in the waiting room at the doctor's office. I like how she painstakingly defines each concept, and even gives non-academic folks (like me) a fairly thorough description of the types of studies that have been used in developing brain organization theory (and tells you that if you've already mastered those concepts, to go ahead and skip certain sections). She even wrestles with how to define certain terms and concepts because she doesn't want to introduce bias (unlike many of the studies she cites). She delicately balances the line so as to not talk down to the reader, but writes intelligently enough so that, I believe, even other brain researchers won't feel insulted. Although I loved Cordelia Fine's *Delusions of Gender*, Jordan-Young avoids the sarcasm and snarkiness that is so prevalent in Fine's work. As a result, *BrainStorm* is a serious survey of dozens of brain studies, whose results are really not as clear-cut as the researchers would have us believe. Muddling through the incessant citations can slow you down, as she often cites multiple studies at once; but this cannot be avoided, and indeed, is necessary to make her points.

Perhaps most striking is the fact that virtually none of the studies uses the same definition (or any definition at all) for words like "feminine" and "masculine." When pressed, researchers and scientists insist that such concepts are "common sense" and require no explicit definitions. [Read more](#)

Jordan-Young's book is an enormously worthwhile exploration as to what has gone wrong in brain science. While other scholars within science studies have pointed toward the many ways in which

bias are (perhaps unavoidably) structured into scientific studies, Jordan-Young offers a careful exploration as to the specific ways in which such research has been flawed. Much of her analysis concerns ways in which brain scientists have measured either masculinity/femininity (in research on sex differences) or homo/heterosexuality (in research on "the gay gene"). While many brain scientists have taken these constructs for granted, it turns out that studies are using many different definitions in their research, even contradictory ones, yet they have generally failed to recognize this basic fact, with many researchers citing earlier studies that actually *contradict* theirs as evidence in favor of their own conclusions.

Jordan-Young seems to have written this evaluation in hopes of pointing out these flaws to both a popular audience and to brain researchers themselves. It's been disappointing then, to see the reviews this book has received in the scientific journals. Basically, the response has been to agree that Jordan-Young has pointed out many serious flaws in the research, but to then go on and assert "Well, there are *other* studies that I like, and Jordan-Young does not discuss those. So overall, we should continue to believe in these sex/sexual orientation differences." OK, well, I'm not a brain researcher myself, just an interested observer, so *perhaps* they're right. BUT, what about all the junk science that's there? Why not be concerned about it? Why not say "Whoa! Look at all this junk! How did all this get here?"

This is a brilliant book. It calmly, with substantive evidence, and careful dissection of the research shows that the research on brain organization and the subsequent claims about gender are built on a house of sand (if I may be allowed to shift metaphors). Jordan-Young, who has a background in science and it shows, points out some troubling problems with the research: definitions of key terms have changed over time but the old and new studies are lumped together as if they were comparable (they are not), contemporaneous studies that do not measure the same things are lumped together as if they were comparable (they are not), contrary results are not reported, as well as other problems. The bottom line: the supposedly solid evidence on which gender differences (and their subsequent implications for gendered behavior) are not even close to being on solid ground. In the spirit of true science, she calls for more careful research.

I have taught Psychology of Women, Critical Thinking and other psychology courses for many years. I have been dismayed at the books claiming to present the research on gender comparisons, but in fact being highly selective about what they choose to report (their side only), talking only biology and ignoring social psychology (like the book "The Female Brain") and other cheap tricks. Jordan-Young avoids selection bias by examining every study done on the subject of brain organization, leaving nothing out. Many of her criticisms are familiar to me and others who teach gender studies but her synthesis and conclusions are brilliantly her own. She takes the problems and criticisms a giant leap forward.

You know who's having himself a moment is Norman Mailer. From a whopping new edition of selected essays to a whopping new biography, that almost celebrated and most reviled of American writers is again in death commanding the attention he demanded in life. In this spirit of resurgence, we've posted below a most Mailerish of excerpts from his "First Advertisement for Myself," from his 1959 book full of them. Say what you will "he certainly did" but the man could write. ----- An author's personality can help or hurt the attention readers give to his books, and it is sometimes fatal to one's talent not to have a public with a clear public recognition of one's size. The way…

I felt like I was back in my biology classes, picking apart research to find the flaws in the popular theories. I've read the other popular brain science books lately, but none of those really picked apart the studies they were supporting (or refuting). Jordan-Young does what I have to believe is a remarkably thorough job of compiling the studies from the last fifty years in this field and basically saying, "Look, none of these are real experiments, so you have to take these results with a grain...more I felt like I was back in my biology classes, picking apart research to find the flaws in the popular theories. I've read the other popular brain science books lately, but none of those really picked apart the studies they were supporting (or refuting). Jordan-Young does what I have to believe is a remarkably thorough job of compiling the studies from the last fifty years in this field and

basically saying, "Look, none of these are real experiments, so you have to take these results with a grain of salt." (It's a bit more complicated than that, but that's the gist.)

LOVED the information. LOVED the layout. LOVED the idea. LOVED the dedication to thoroughness. And, really respected her for taking as unbiased an approach as she could (though I still can't understand how she could say sex-typed interests are "innate".... She fell into the "this goes without saying" trap she was freeing other authors/researchers from.).

Four stars because of how clunky the prose is. It shouldn't have taken me a month to read a book about the study of gender via brains -- the topic is extremely interesting to me and I felt like I was reading constantly. That's not to say the writing itself isn't great -- it just didn't flow like it should have (possibly due to the many in-text citations?).(less)

I found the information in this book provocative, but I really wish it were better written. Unfortunately, it's kind of a slog. The author takes an exhaustive look into the theory of brain organization -- which states that hormonal changes in-utero can cause predictable changes in gender expression, identity, and sexuality in adult humans -- and pretty much demolishes it. Based on her extremely thorough read-through of all of the significant studies on the subject, I'm pretty sure we're safe cal...more I found the information in this book provocative, but I really wish it were better written. Unfortunately, it's kind of a slog. The author takes an exhaustive look into the theory of brain organization -- which states that hormonal changes in-utero can cause predictable changes in gender expression, identity, and sexuality in adult humans -- and pretty much demolishes it. Based on her extremely thorough read-through of all of the significant studies on the subject, I'm pretty sure we're safe calling the whole thing a pseudo-science and starting over from scratch.(less)

Read Chapter 3 and Chapter 7 and really enjoyed the reading. Jordan-Young provides a clear, accessible, comprehensive review and critique of sex/gender related brain studies in this book. Chapter 3 examines many researches done on the topic of differences between a male brain and a female brain, and Chapter 7 examines scientific studies that deal with (homo)sexuality and try to locate its biological origin. Many NYT science stars can be found in her critical reading of brain studies. And, surpr...more Read Chapter 3 and Chapter 7 and really enjoyed the reading. Jordan-Young provides a clear, accessible, comprehensive review and critique of sex/gender related brain studies in this book. Chapter 3 examines many researches done on the topic of differences between a male brain and a female brain, and Chapter 7 examines scientific studies that deal with (homo)sexuality and try to locate its biological origin. Many NYT science stars can be found in her critical reading of brain studies. And, surprisingly, this book is actually quite a page-turner.(less)

This is the book-I-wish-I-had-written of the year. Jordan-Young tackles a huge literature and comes out on top. She takes us through carefully and comprehensively, clearly explaining the concepts her audience needs to understand to navigate the data on the organizational hypothesis (the hypothesis that prenatal hormone exposure shapes human sex-linked behavior).

And the message she relays is important. Not surprisingly (at least from my variation-is-everywhere point of view), studies contradict themselves, definitions change, null results aren't reported. One great example that she gives is studies that split the line between homo- and heterosexual at literally every point on the Kinsey scale. Though ostensibly finding results linking hormones to homosexuality, these studies actually inherently contradict one another.

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