Chapter 28
Ideological Bias in the Psychology of Sex and Gender

Marco Del Giudice

In this chapter, I discuss the influence of ideological bias in the psychological study of sex and gender. This kaleidoscopic issue would demand an entire book; attempting to be systematic and exhaustive would be an impossible task. Instead, I take a somewhat informal approach as I try to highlight key points of tension, clarify some conceptual muddles, offer interesting examples, and put everything in historical perspective. The last bit is especially important, because the received history of this topic is also ideologically slanted and full of distortions, half-truths, and sometimes sheer fabrications. To delimit the field and remain close to the topic of this volume, I focus mainly on academic psychology, leaving aside the applied psychological disciplines (e.g., psychotherapy) and the neurosciences.

The Problem in a Nutshell

As pointed out by Winegard and Winegard (2018), bias in the social sciences is more often ideological than narrowly political (in the sense of left- vs. right-wing partisanship); the reason why sex and gender are hot topics is that they play a central role in egalitarian ideologies, of which feminism is a prime example. Most present-day feminists embrace what Winegard and Winegard labeled *cosmic egalitarianism*, or the belief that all ethnic and cultural groups, social classes, and sexes are relatively equal on all socially desired traits; note that "equal" should be read as *biologically* equal, because measurable differences may also arise because of differential

M. Del Giudice (✉)
Department of Psychology, University of New Mexico, Albuquerque, NM, USA
e-mail: marcodg@unm.edu

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socialization, prejudice, and discrimination.[1] Thus, egalitarianism and desire for social change toward equality go hand in hand with a social constructionist, "blank slate" perspective on human nature (see, e.g., Anomaly & Winegard, 2020; Eagly, 2018; Pinker, 2003; Murray, 2020; Winegard & Winegard, 2018). In short:

> Feminist theorists view gender not as a biologically created reality, but as a socially constructed phenomenon. (Else-Quest & Hyde, 2018, p. 13)

> Many feminists are wary of biological explanations of anything, in large part because biology always seems to end up being a convenient justification for perpetuating the status quo. (ibid., p. 45)

Because feminism is the dominant ideological influence in the study of sex and gender, this chapter takes a critical stance toward feminist theory and research. However, my goal is not to write an anti-feminist pamphlet. There is no doubt that feminist scholars have made valuable contributions to psychology and brought attention to important themes; evolutionary psychologists like myself have long recognized this (e.g., Buss & Schmitt, 2011; Campbell, 2006; Nicolas & Welling, 2015). In a recent exchange we had with some prominent feminist scientists, my colleagues and I found several points of agreement despite our different perspectives (Del Giudice et al., 2018a; Fine et al., 2018). While some feminist literature is—by design—polemical and one-sided, this is not necessarily a problem; sometimes, ideological biases help scholars see facts and explanations that others would miss. The dialectic can remain healthy as long as multiple viewpoints are allowed and ideas are evaluated on their own merits. The trouble begins when an entire field or discipline aligns in the same ideological direction, so that certain domains of research become "sacralized" and hence systematically distorted (see Winegard & Winegard, 2018).

From this standpoint, the state of psychological research on sex and gender is mixed, with a lot of variation across subdisciplines (and evolutionary psychology as the biggest outlier; see Buss, 2015; Pinker, 2003; Stewart-Williams, 2018). While sex is not nearly as sacralized as race, certain questions border on taboo; for example, biological explanations of sex differences in educational and occupational outcomes are likely to attract denunciations and attacks, especially if they reach the general public. As the ideological landscape evolves, previously uncontroversial issues become morally charged in the eyes of activists; right now, the idea that there are two biological sexes seems on its way to become "problematic" (more on this below).

[1] So-called *difference feminism* has been out of fashion since the late 1990s and did not necessarily accept biological explanations of sex differences. Of course, one can be an equal-opportunity feminist while believing that some sex differences in behavior and cognition have a strong biological basis and contribute to determine enduring differences in social outcomes. But this viewpoint has virtually no traction on present-day feminism, which—especially in academia—is moving toward increasingly extreme versions of social constructionism (see, e.g., Else-Quest & Hyde, 2018; Pluckrose & Lindsay, 2020).

Because ideological pressures in this area of psychology are uneven and relatively subtle (especially compared with more politicized social sciences like sociology and cultural anthropology), they are mostly expressed as implicit "preferences" that affect the design, interpretation, publication, and divulgation of research. Roughly speaking:

(a) No differences are better than any differences (unless they are presented as evidence of discrimination).
(b) Small differences are better than large differences (same as above).
(c) Variable, malleable differences are better than stable, unchanging differences.
(d) Socialization is better than biology.

And the list may be expanding to include:

(e) Nonbinary is better than binary.

To complete this summary, one should note that, from an egalitarian perspective, differences are better tolerated if they reflect positively on a group that is perceived as underprivileged or oppressed (e.g., findings of higher verbal ability in females tend to be less controversial than findings of higher spatial and mathematical ability in males). Note that the preferences listed above are not "wrong" in the sense that they should be reversed; to be sure, discrimination does occur, sex differences are often small, and many traits—including evolved traits—are expressed in a context-sensitive manner and can be shaped by the environment. The problem is that their collective weight pushes the field in a particular direction, making it easier (or harder) to publish certain kinds of results and formulate certain interpretations. These preferences are enforced more rigidly when approaching controversial topics, such as sex differences in educational and occupational outcomes. They also become more visible as one moves from the technical literature to the public interface of the discipline—for example, in introductory textbooks, course materials, and statements by professional associations. (One reason may be that ideological pressures in certain sections of the public are stronger than within psychology itself.[2])

The result is that important topics are presented in a slanted fashion or not discussed at all; they include the theory of sexual selection (see Geary, 2021); the existence of large sex differences in occupational interests (e.g., Lippa, 2010; Morris, 2016), in multivariate profiles of personality (e.g., Del Giudice et al., 2012; Kaiser, 2019; Kaiser et al., 2020), and at the tails of cognitive abilities (e.g., Baye & Monseur, 2016; Wai et al., 2010, 2018); findings of temporal and cross-cultural stability (e.g., Schmitt & the International Sexuality Description Project, 2003; Stoet & Geary, 2020); "paradoxical" patterns that run against simple socialization accounts, with larger sex differences in more gender-egalitarian countries (e.g., Falk & Hermle, 2018; Kaiser, 2019; Mac Giolla & Kajonius, 2019; Schmitt et al., 2017;

[2] For a revealing example, consider the reactions to James Damore's now-infamous "memo" on sex differences in tech jobs (Damore, 2017; see Anomaly & Winegard, 2020).

Stoet & Geary, 2015, 2018); and cross-species similarities in sexually differentiated behaviors (e.g., Alexander & Hines, 2002; Benenson, 2019; Cashdan & Gaulin, 2016; Hassett et al., 2008). For recent overviews of these and related topics, see Archer (2019), Geary (2021), and Murray (2020).

Interlude: Sex, Gender, and the Binary

Up to this point, I have used "sex" and "gender" casually, but before moving ahead, it is important to do some conceptual clean-up.[3] While many scholars treat these terms as more or less synonyms (Haig, 2004), they have different histories and implications. The usage of "gender" as the social and/or psychological counterpart of biological sex was introduced in psychology by Money (1955), though Bentley (1945) had made the same distinction years before. The term was popularized by Stoller (1968) and quickly adopted by feminist scholars in the 1970s (Haig, 2004; Janssen, 2018). "Gender" was going to denote the social roles, behaviors, and aspects of identity associated with being male or female, as distinct from the biological characteristics of the two sexes. The assumption was that psychological differences are largely or exclusively determined by socialization (see Deaux, 1985; Oakley, 1972; Unger, 1979). Scholars began to use "gender" instead of "sex" even if the proposed definitions were frustratingly unclear. For example, a widely cited paper by Unger (1979) defined gender as:

> [T]hose nonphysiological components of sex that are culturally regarded as appropriate to males or to females. Gender may be used for those traits for which sex acts as a stimulus variable, independently of whether those traits have their origin within the subject or not. It refers to a social label by which we distinguish two groups of people. (Unger, 1979, p. 1086)

This definition mixes correlations with social evaluations and individual traits with group labels. In fact, it may be impossible to make the concept of gender fully coherent *unless* one embraces a social constructionist view. The problem is that psychological traits arise from the interplay between social and biological processes—even worse, the very distinction between "social" and "biological" is blurry and ill-defined (see, e.g., Lippa, 2005). This makes the distinction between sex and gender effectively unworkable, as many have noted over the years (e.g., Blakemore et al., 2009; Eagly & Wood, 2013; Ellis et al., 2008; Haig, 2004). For a recent illustration, consider the guidelines in the latest APA publication manual:

> *Gender* refers to the attitudes, feelings, and behaviors that a given culture associates with a person's biological sex […] Gender is a social construct and a social identity. […] *Sex* refers to biological sex assignment; use the term "sex" when the biological distinction of sex assignment (e.g., sex assigned at birth) is predominant. […] In some cases, there may not be a clear distinction between biological and acculturative factors, so a discussion of both sex and gender would be appropriate. (American Psychological Association, 2019, p. 138)

[3] Parts of this section are adapted from Del Giudice (2020).

As usual, "gender" is defined from a social constructionist standpoint; but in practice, the distinction between biology and socialization is almost never clear-cut, so authors are instructed to discuss "both sex and gender" and then left to their own devices. Interestingly, biological sex is defined as something that gets "assigned" to people, an expression that is largely meaningless (unless one is talking about the treatment of intersex conditions) but conforms to the precepts of transgender activism.

The flaws of the sex-gender distinction have led some feminist scholars to adopt the hybrid term "sex/gender" (sometimes "gender/sex") as a way to recognize that biological and social factors are inseparable and underscore the potential for plasticity (Fausto-Sterling, 2012; Hyde et al., 2019; Jordan-Young & Rumiati, 2012; Rippon et al., 2014). Unfortunately, this terminological fusion may end up deepening the conceptual confusion. The proponents of sex/gender usually describe it as a continuum or even a multidimensional collection of semi-independent features; a person's sex/gender can be hybrid, fluid, or otherwise nonbinary (see, e.g., Hyde et al., 2019; Morgenroth & Ryan, 2020). One crucial implication is that biological sex is *also* nonbinary and socially constructed, in line with the tenets of fourth-wave feminism (Else-Quest & Hyde, 2018; Pluckrose & Lindsay, 2020). On this view, the "sex binary" is a socially constructed fiction; the old idea that there are two sexes is simplistic and inaccurate and does not stand up to sophisticated analysis. Hence, "male" and "female" should be replaced with multiple overlapping categories or even (multi)dimensional scores of gendered self-concepts and attitudes (Hyde et al., 2019; Joel & Fausto-Sterling, 2016). This argument can be seductive but has one problem—it fundamentally misunderstands the nature of sex. I now briefly discuss why.

The Real Sex Binary

In the social sciences, many scholars define sex as a collection of traits—X/Y chromosomes, gonads, hormones, and genitals—that cluster together in most people but may also occur in rare atypical combinations (e.g., Blakemore et al., 2009; Fausto-Sterling, 2012; Helgeson, 2016; Joel, 2012). This definition is the basis for the widely repeated claim that up to 2% of live births are intersex (Blackless et al., 2000; see, e.g., Hyde et al., 2019). In fact, the 2% figure is a gross overestimate. Blackless et al. (2000) defined intersex very broadly as individuals who deviate from the "Platonic ideal" of sex dimorphism; accordingly, they included several conditions (e.g., Klinefelter syndrome, vaginal agenesis, congenital adrenal hyperplasia) that affect sexual development but can be classified as "intersex" only in a very loose sense (Sax, 2002). If one restricts the term to conditions that involve a discordance between chromosomal and phenotypic sex, or a phenotype that cannot be classified unambiguously as either male or female, the frequency of intersex is almost certainly less than 0.02% (Sax, 2002; see also Hull, 2003).

On a deeper level, the "patchwork" definition of sex used in the social sciences is purely descriptive and lacks a functional rationale. This contrasts sharply with how the sexes are defined in biology. From a biological standpoint, what distinguishes the males and females of a species is the size of their gametes: males produce small gametes (e.g., sperm), and females produce large gametes (e.g., eggs; Kodric-Brown & Brown, 1987).[4] Dimorphism in gamete size or *anisogamy* is the dominant pattern in multicellular organisms, including animals. The evolution of two gamete types with different sizes and roles in fertilization is the predictable consequence of selection to maximize the efficiency of fertilization (Lehtonen & Kokko, 2011; Lehtonen & Parker, 2014). In turn, anisogamy set the stage for sexual selection (i.e., selection via mating competition and mate choice), with predictable consequences for the evolution of sexually differentiated traits in morphology, development, and behavior (Janicke et al., 2016; Lehtonen et al., 2016; Schärer et al., 2012). Of course, the existence of two distinct sexes does not mean that sex-related *traits* must also have binary, sharply bimodal distributions. The sex binary is perfectly compatible with large amounts of within-sex variation in anatomy, physiology, and behavior. In fact, sexual selection often amplifies individual variability in sex-related traits (typically more strongly in males) and can favor the evolution of multiple alternative phenotypes within each sex (see Del Giudice et al., 2018b; Taborsky & Brockmann, 2010).

To be clear, the biological definition of sex is not just one option among many equally valid alternatives; the very *existence* of differentiated males and females in a species depends on the existence of two gamete types. Chromosomes and hormones participate in the mechanics of sex determination and sexual differentiation, but do not play the same foundational role. The sex binary, then, is not a fiction but a basic biological fact: even if a given individual may fail to produce viable gametes, there are only two gamete types with no meaningful intermediate forms (Lehtonen & Parker, 2014; see also Cretella et al., 2019). This dichotomy is not statistical but *functional* and hence is not challenged by the existence of intersex conditions (regardless of their frequency), nonbinary gender identities, and other seeming exceptions. As a rule, scholars who argue against the "sex/gender binary" are happy to dive into the fine details of sexual differentiation, but typically avoid mentioning anisogamy, let alone grappling with its implications for the evolution of the sexes. This has not stopped the misconception that "sex is not binary" from spreading, not just in the social sciences but in the broader literature. In 2015, *Nature* published a feature claiming that sex had been "redefined" along nonbinary lines (Ainsworth, 2015); in 2020, a research update on the COVID-19 virus came with the disclaimer "*Nature* recognizes that sex and gender are neither binary nor fixed" (Nature, 2020).

In the rest of the chapter, I always use "sex" and "sex differences" whenever the distinction is between males and females as groups. When discussing research on

[4] Species with *simultaneous hermaphroditism* (mostly plants and invertebrates) do not have distinct sexes, since any individual can produce both types of gametes at the same time.

stereotypes, social perception, identity, etc., I use "sex" and "gender" in a context-sensitive manner, without any implications about biology vs. socialization. (For example, it has become customary to talk of "gender stereotypes" instead of "sex stereotypes," and I use the standard label for simplicity.)

A Peek at the Recent Literature

Introductory Textbooks

For many college students, introductory textbooks represent the first or only exposure to the field of psychology. As an informal survey of the field, I went through seven recent introductory psychology textbooks, five traditional (Burton et al., 2019; Grison & Gazzaniga, 2019; Kalat, 2016; Morris & Maisto, 2018; Schacter et al., 2020) and two open-access (Noba Project, 2020; Spielman, 2020). Note that I selected these textbooks based on availability, so this should not be mistaken for a systematic overview. In two texts out of seven (Grison & Gazzaniga, 2019; Spielman, 2020), sex differences in personality and cognition were not discussed at all, except for some vague references to gender stereotypes. Sex differences in personality were mentioned in only two textbooks (Kalat, 2016; Schacter et al., 2020); in both cases, the authors described them as small and emphasized overall similarities. All seven texts mentioned sex differences in aggression and/or mating and noted possible biological explanations (Burton et al., 2019; Kalat, 2016; Noba Project, 2020; Schacter et al., 2020), although in most cases the coverage was extremely cursory and partial. Five textbooks addressed sex differences in cognitive abilities while emphasizing similarity and/or malleability (Burton et al., 2019; Kalat, 2016; Morris & Maisto, 2018; Noba Project, 2020; Schacter et al., 2020). One of them cited evidence that cognitive sex differences are stable across time and places (Burton et al., 2019), but none discussed findings of stronger differences in gender-egalitarian countries. Five texts introduced at least *some* concepts related to sexual selection, however briefly (Burton et al., 2019; Kalat, 2016; Morris & Maisto, 2018; Noba Project, 2020;[5] Schacter et al., 2020). Finally, two texts out of seven offered "nonbinary" accounts of sex and/or gender (Grison & Gazzaniga, 2019; Noba Project, 2020).

This quick survey illustrates many of the trends I discussed earlier. As expected, there is an overall tendency to ignore and/or downplay sex differences, to the point that a substantial fraction of the textbooks was partly or completely silent on the issue. At the same time, there is quite a bit of variation in coverage, and a few outliers that deviate from the general trend. The textbooks also revealed a tension between the standard preferences of the discipline and the growing influence of

[5] The Noba Project textbook is a collection of stand-alone chapters, each written by different authors. Sexual selection was discussed in the chapter on evolutionary psychology (Buss, 2020), but not in the one on gender, which took a decidedly social-constructionist approach (Brown et al., 2020).

evolutionary psychology, particularly in specific domains such as mating and aggression (see also Ferguson et al., 2018).

Generalist Journals

Within the technical literature, generalist journals facilitate the exchange of ideas and findings across specialized subfields. Because they publish papers from multiple areas of research, generalist journals should provide something like an "average" picture of the discipline, smoothing out the biases and intellectual traditions of individual areas. For this survey, I reviewed the papers published during the years 2018–2020 in six high-impact journals: *American Psychologist*, *Psychological Review*, *Psychological Bulletin*, *Annual Review of Psychology*, *Current Directions in Psychological Science*, and *Perspectives on Psychological Science*.[6] I selected relevant papers based on their title and abstract and counted a total of 19 articles dealing with sex and gender.[7]

Of the 19 papers, 4 centered on the idea of challenging the sex/gender binary: a widely disseminated paper by Hyde et al. (2019); two comments to Hyde et al., one favorable (Reilly, 2019) and one critical (Cretella et al., 2019); and a radical social-constructionist piece by Morgenroth and Ryan (2020).

Three papers dealt specifically with gender stereotypes. These were a review of the topic by Ellemers (2018), a historical analysis of stereotype changes in the USA by Eagly et al. (2020), and an experimental study on negative stereotypes about the intellectual ability of girls and women (Bian et al., 2018). In her review, Ellemers rejected the idea that gender stereotypes may reflect actual psychological differences between the sexes ("If there is a kernel of truth underlying gender stereotypes, it is a tiny kernel"; p. 278) and gave short shrift to possible biological explanations. In the study by Bian et al., participants seemed to assume that people with very high intelligence are more likely to be males than females. The authors dismissed this belief as a "negative stereotype about women"; they seemed unaware that males *are* in fact overrepresented at the high end of the IQ distribution (as well as the low end; e.g., Arden & Plomin, 2006; Johnson et al., 2008).[8] A fourth paper by Gruber et al. (2021) was a wide-ranging analysis of gender gaps in academic psychology (e.g., career advancement, salary, grants, publication and citation rates). This paper was noteworthy because it dismissed some robust empirical patterns—men are overrepresented at the highest levels of cognitive ability, men are more assertive and

[6] I completed this survey on November 9, 2020, and included advance publication papers that were online at that time.

[7] One additional paper (Webermann & Murphy, 2020) offered recommendations to reduce "gender-based violence and misconduct on college campuses." Since this paper had a strictly applied focus and did not deal with basic research on sex and gender, I excluded it from the survey.

[8] The issue of greater male variability in intellectual abilities has a long and contentious history, which I address later in the chapter.

dominant, and women are more communal—as mere stereotypes (see Del Giudice, 2015; Twenge, 1997). The authors also embraced a socialization account of sex differences and rejected the possibility that some of them may have an adaptive explanation.

Of the remaining 11 papers, 4 took an explicitly evolutionary approach: a review of men's and women's response to sexual versus emotional infidelity (Buss, 2018); a comparative analysis of peer relationships in male and female humans vs. other primates (Benenson, 2019); a paper on mitochondrial functioning as a mechanism for variation in general intelligence and a possible contributing factor to sex difference in variability (Geary, 2018); and a conceptual paper on gender as the basis for social cognition (Martin & Slepian, 2020).[9] Another experimental study (Treat et al., 2020) investigated men's perception of women's sexual interest, but—surprisingly—failed to mention the substantial evolutionary literature on this topic (e.g., Haselton, 2003; Haselton et al., 2016; Murray et al., 2017; Perilloux & Kurzban, 2015).

The final six papers were all meta-analyses or systematic reviews of sex differences. The topics were episodic memory (Asperholm et al., 2019), student achievement in reading/writing (Reilly et al., 2019), the initiation of negotiations (Kugler et al., 2018),[10] the development of spatial reasoning (Lauer et al., 2019), the prevalence of mental disorders (Hartung & Lefler, 2019), and maternal reminiscing styles (differentiated by the child's sex; Waters et al., 2019). Of the meta-analyses that included a review of theoretical models, three considered both social and biological explanations (Asperholm et al., 2019; Hartung & Lefler, 2019; Reilly et al., 2019), while two only considered socialization effects (Kugler et al., 2018; Waters et al., 2019).

Once again, this brief survey of generalist journals reveals a fair amount of theoretical diversity, but also a pervasive tendency to emphasize socialization over biology and downplay robust empirical findings as "stereotypes." Four out of 19 papers were motivated by the transparently ideological project of challenging (and ultimately "disrupting") the sex/gender binary.

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[9] More precisely, Martin and Slepian (2020) mixed ideas about evolved psychological mechanisms from evolutionary psychology with the socialization account of social role theory (Eagly & Wood, 2012, 2016; see below). The result is a strangely incoherent theory, according to which (a) humans possess evolved, deeply ingrained, and stable gender schemas about typical masculine vs. feminine behaviors; but (b) masculine and feminine behaviors *themselves* are mainly shaped by socialization and malleable to the point that they can be changed with subtle linguistic interventions (e.g., relabeling assertive and competitive behaviors from "masculine" to "agentic" should help women become more competitive in the workplace).

[10] The meta-analysis by Kugler et al. (2018) found that sex differences in the initiation of negotiation (a behavior that is thought to contribute to gender inequalities) were "small" by conventional statistical criteria (for a detailed critique of conventional criteria for effect sizes, see Del Giudice, 2020). As I noted above, this is usually a preferred outcome—but *not* when differences are presented as evidence of discrimination. Indeed, the authors went to some length to explain that even small effects can cumulate over time and give rise to large differences in outcomes—a reasonable argument, but one that is rarely brought up in the literature on "gender similarities" (e.g., Hyde, 2005, 2014; but see Zell et al., 2015).

Among other things, this survey is a reminder of the continuing popularity of *social role theory* (SRT; Eagly & Wood, 1999, 2012, 2016; Wood & Eagly, 2012) in the sex differences literature. SRT played a major theoretical role in 4 of the papers (Gruber et al., 2021; Eagly et al., 2020; Kugler et al., 2018; Martin & Slepian, 2020) and was cited in another 4 (Ellemers, 2018; Hyde et al., 2019; Morgenroth & Ryan, 2020; Reilly et al., 2019), for a total of 8 papers out of 19. (SRT was also cited in four of the seven introductory textbooks: Burton et al., 2019; Kalat, 2016; Noba Project, 2020; and Schacter et al., 2020.) In a nutshell, the theory posits that evolved sex differences in physical and reproductive traits (e.g., size, strength, pregnancy, and lactation) have shaped the division of labor between men and women throughout history (e.g., warfare vs. child-rearing). In turn, the continued existence of sexually differentiated tasks has created powerful cultural stereotypes about masculine and feminine traits, most notably along the axes of dominance/agency vs. nurturance/communion. These stereotypes affect individual behavior through socialization (partly via role-congruent activation of hormonal changes, e.g., in testosterone and oxytocin levels), leading to the development of psychological differences between the sexes.

According to SRT, psychological sex differences are mostly constructed by socialization practices, but the fact that they are ultimately grounded in evolved physical differences explains their stability across time and cultures. From a biological standpoint, SRT is extremely implausible, as it postulates an unexplained dualism between physical traits (subject to natural and sexual selection) and psychological traits (more or less untouched by selection and only shaped by socialization, either directly or indirectly via hormonal regulation).[11] Moreover, the theory

[11] In a recent video interview (October 10, 2019; https://www.youtube.com/watch?v=gPsXpDIE0LA), Alice Eagly claimed that she had never denied the existence of sexually selected differences in psychological traits, but had simply chosen to emphasize the role of socialization. This is a transcript of the segment (starting at 17:56):

> They [the evolutionary critics] put words in my mouth that I never said! I never said there weren't such influences. It's merely that I emphasized others that they forget about. So I would not claim that there are no such effects of prenatal androgenization or sexual selection or whatever, but the force of my work has been to show that there are other influences, and we need to get it all together.

This will come as a surprise to the many scholars who have used SRT *precisely* to discount the role of sexual selection and other biological factors. But the interview does raise the question of what SRT actually says in this regard. Re-reading the key papers presenting the theory, I could not find a single passage explicitly stating that psychological sex differences can be explained by sexual selection, though I did find a number of passages suggesting the opposite (e.g., Eagly & Wood, 1999, p. 415; Eagly & Wood, 2016, p. 464). Wood and Eagly (2012) came closest to accepting an organizational role for prenatal androgens, but described the evidence as equivocal and concluded that "[a]lthough sex-differentiated social experience surely does not operate on a blank slate, what is written on that slate has not been adequately deciphered so far" (p. 67). Throughout the chapter, they discussed how socialization may affect hormonal regulation, but not how hormonal differences may modulate social interactions (note that, in their Figure 1, socialization factors affect hormonal regulation, but not vice versa). Similarly, Wood and Eagly (2000) stated "[…] we recognize that such biological factors [hormones] work in concert with psychological processes involv-

fails to explain why many sex differences become larger in more gender-egalitarian cultures (see Friedman et al., 2000; Geary, 2021; Kenrick & Li, 2000; Schmitt, 2015). However, SRT has proven quite attractive to social scientists, likely because it allows them to effectively adopt a pure socialization perspective—and avoid inconvenient questions about evolved sex differences "in the brain"—without appearing to reject evolutionary biology (see also Geary, 2021).

A Jump into the Time Warp

The received view on the history of sex and gender in psychology is nicely summarized by this quote, from an article in the *Monitor on Psychology* announcing the APA's new and controversial "guidelines for psychological practice with boys and men":

> Prior to the second-wave feminist movement in the 1960s, all psychology was the psychology of men. Most major studies were done only on white men and boys, who stood in as proxies for humans as a whole. Researchers assumed that masculinity and femininity were opposite ends of a spectrum, and "healthy" psychology entailed identifying strongly with the gender roles conferred by a person's biological sex. (Pappas, 2019, p. 35)

To call this a distorted account would be an understatement: as I show in this section, this familiar narrative turns out to be an almost complete fabrication. I do not blame the author of this quote, though; she simply distilled what can be found in ostensibly authoritative sources, such as this chapter by Denmark et al. (2008) in the second edition of *Psychology of Women*:[12]

> When one examines the psychological research from Wundt's 1874 establishment of the domain of psychology up to recent times, psychology appeared to focus almost exclusively on the behavior of men or male animals. In other words, the first method of examining woman was to categorize them as lacking. Much early research that included female subjects came to the conclusion that women were inferior in some way. Additionally, if females were included in the sample, neither sex nor gender differences were reported, which discounted the influence of these factors and, in essence, was an indication of the belief that men were the norm when considering various psychological factors. And again, if women were included in the studies, biased results indicated that women were by nature inferior. […] However, generally speaking, most early research never investigated comparisons between women and men at all (Schwabacher, 1972). Wendy McKenna and Suzanne Kessler (1977) reported that over 95 percent of all early research did not examine female-

ing social expectations and self-concepts to yield sex differences in behavior" and seemed to endorse "a feedback model in which testosterone affects socially dominant behavior and is in turn affected by such behavior and its outcomes." My conclusion is that Eagly and Wood hedged their bets on the role of sex hormones; their writing on this issue invites a deflationary reading, but remains open to alternative interpretations (see also Eagly, 2018). On the other hand, as far as I can tell, these authors always portrayed SRT as an *alternative* to sexual selection on psychological traits, rather than a complementary explanation.

[12] I recommend the Denmark et al. chapter as a counterpoint to my "revisionist" account. For a less biased history of the field, see Chapter 2 in Blakemore et al. (2009).

> male comparisons, therefore ignoring any possible differences due to sex and gender. Prior to the 1970s, almost all research on women had been relegated to the periphery of psychology rather than integrated into its main body. (Denmark et al., 2008, pp. 5–6)

The entire passage sounds immediately suspicious if one considers that, already in 1894, Havelock Ellis could draw on dozens of studies of psychological sex differences for his influential book *Man and Woman* (more on this below). I was particularly struck by the blanket statement about "over 95% of all early research," so I looked up the original paper by McKenna and Kessler (1977; the 1976 date in the quote is incorrect). To my (mild) surprise, the actual study had little to do with the description. McKenna and Kessler did not analyze "all early research" in psychology, but the latest 312 human experiments on interpersonal attraction and 244 on aggression, ending on December 1973. The authors did not report the date of the earliest studies in the analysis, but it is unlikely that they went further back than 10–20 years.[13] They found that 38–45% of the studies included both males and females,[14] but did not say how many of those studies involved comparisons between the sexes.[15]

This is not an isolated case; feminist history is full of similar distortions and "urban legends" that rarely get corrected from the inside. Notable examples include the claim that women have been underrepresented as participants in medical research (Satel, 2002); that biologists clung to the idea of sperm as active and "macho" and eggs as passive and "coy" because of their sexist prejudices (Gross, 1998); that Victorian physicians used vibrators on female patients to treat hysteria (Lieberman & Schatzberg, 2018); and that before World War II, the color pink was associated with boys, while blue was associated with girls (Del Giudice, 2012, 2017). The problem is not with feminism per se but with activist history in general; whatever the virtues, an activist mindset is a major impediment to critical scrutiny and self-correction and encourages distortions in the service of the ideological narrative (Hoff Sommers, 2009). Unfortunately, activist history is often all one gets when it comes to the topic of sex and gender. In the rest of this section, I use citations from original sources to identify recurring themes and trace some trends that go back more than a hundred years. Some of the quotes are lengthy, but I think it is important to go beyond the soundbites and let the sources speak more freely.

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[13] The authors checked 600 entries for each topic as reported in the *Psychological Abstracts*. Google Scholar returns 1810 results for "interpersonal attraction" between 1953 and 1973 (searched on November 11, 2020). If one third of them was reported in the *Abstracts*, that would amount to about 600 entries.

[14] Combined data from Tables 1 and 2 in McKenna and Kessler (1977).

[15] McKenna and Kessler cited a paper by Carlson and Carlson (1960), who examined 298 human studies published in the *Journal of Abnormal and Social Psychology* between 1958 and 1960. They found that 36% of the studies included participants of both sexes and that 30% of those studies reported statistical tests of sex differences. There was no information about the proportion of studies that reported descriptive statistics for both sexes without performing a test (and vice versa).

The Dark Ages (Before the 1960s)

The best place to start may be the first edition of Havelock Ellis' *Man and Woman* (1894). This book is a wide-ranging overview of sex differences and similarities in physical and psychological traits. Considering that it was written more than 120 years ago, I think it has aged remarkably well.[16] Throughout the book, Ellis took pains to acknowledge possible biases, strike a balance between nature and nurture, and reject the idea of female (or male) inferiority. Here are a few quotes that convey the spirit of the book:

> It is also being recognised as reasonable that both sexes should study side by side at the school and the college, and where not side by side, still in closely similar fashion, while the recreations of each sex are to some extent becoming common to both. Such conditions have tended to remove artificial sexual differences, and have largely obliterated the coarser signs of superiority which may before have been possessed by one sex over another. The process of transition is still in rapid progress. (Ellis, 1894, p. 17)

On biases in sex differences research:

> We have to recognise, it will be seen, not merely the difficulties which come from too small a number of observations, where we have the resource of putting one series of observations against another, but also the more serious difficulty of inevitable bias in the investigator's mind. […] Thus one conscientious investigator (like Manouvrier) may find that all the facts of anatomy and physiology point to the superiority of women; another, equally conscientious (like Delaunay), may find that they all point to the superiority of men. (ibid., pp. 28–29)

On sex differences in brain anatomy:

> While, however, the brain is at present an unprofitable region for the study of sexual difference, it is, as we have seen, an extremely instructive region for the study of sexual equality. Men possess no relative superiority of brain-mass; the superiority in brain-mass, so far as it exists, is on woman's side;[17] this, however, implies no intellectual superiority, but is merely a characteristic of short people and children. Nor is there any well-marked sexual arrangement of the nervous elements which implies relative inferiority on one side or the other. (ibid., p. 113)

On sex differences in emotionality (discussed under the rubric of "affectability"):

> The question still remains how far the affectability of women is natural and organic, how far it is the mere accidental result of external circumstances. Is the greater emotionality of women a permanent and ineradicable fact? There can be no doubt that to a very large extent

[16] Needless to say, there are a lot of incorrect or outdated statements in the book, and some ideas of the time (e.g., the recurring distinction between "higher" and "lower" races) have definitely *not* aged well. But readers familiar with current research on sex differences will be struck by how many issues Ellis managed to get approximately right, despite the limited data and conceptual tools available at the time.

[17] Note that Ellis was talking about differences in *relative* brain mass, after adjusting for differences in body mass or size. Ellis spent several pages (pp. 95–101) reviewing alternative ways to make this adjustment and considering their limitations. In contrast with Ellis' conclusions, the recent evidence shows that men have a larger brain even controlling for body size (e.g., Ankney, 1992; Ritchie et al., 2018).

> emotionality may be modified. […] Just as we have sure reason to believe that sensibility may by training be increased, so there is still greater reason to believe that affectability may by training be decreased. That there is, however, a limit to this sexual equalisation of affectability remains extremely probable. […] Affectability in women may be reduced to finer and more delicate shades; it can scarcely be brought to the male standard.
>
> This result is by no means to be regretted. We have seen that the affectability of women ensures to them certain solid advantages, and assists to safeguard them against evils from which men are specially prone to suffer. (ibid., pp. 313–314)[18]

On Darwin's hypothesis of greater male variability:

> Both the physical and the mental characters of men show wider limits of variation than do the physical and mental characters of women. Monsters are more often male than female. […] Abnormal variations of nearly all kinds are more frequent in men than in women. […] We must regard genius as an organic congenital abnormality (although the evidence in proof of this cannot be entered into here), and in nearly every department it is, undeniably, of more frequent occurrence among men than among women. The statement of this fact has sometimes been regarded by women as a slur upon their sex; they have sought to explain it by lack of opportunity, education, etc. It does not appear that women have been equally anxious to find fallacies in the statement that idiocy is more common among men. Yet the two statements must be taken together. Genius is more common among men by virtue of the same general tendency by which idiocy is more common among men. The two facts are but two aspects of a larger zoological fact—the greater variability of the male. (ibid., pp. 358–366)

And finally:

> Any reader who has turned to this book for facts or arguments bearing on the everlasting discussion regarding the "alleged inferiority of women," and who has followed me so far, will already have gathered the natural conclusion we reach on this point. We may regard all such discussion as absolutely futile and foolish. If it is a question of determining the existence and significance of some particular physical or psychic sexual difference a conclusion may not be impossible. To make any broad statement of the phenomena is to recognise that no general conclusion is possible. Now and again we come across facts which group themselves with a certain degree of uniformity, but as we continue we find other equally important facts which group themselves with equal uniformity in another sense. The result produces compensation. (ibid., pp. 393–394)

One should remember that first-wave feminism was already ascendant at the end of the nineteenth century and was going to intensify in the early decades of the twentieth. A key representative of this period was Helen Thompson Woolley, who in 1903 published *The Mental Traits of Sex*, a thorough experimental investigation of sex differences across dozens of tasks.[19] At the end of the book, Woolley took issue

[18] Neuroticism/emotional stability is one of the personality traits showing the largest and most robust differences between men and women. Sex differences become even larger in more gender-egalitarian countries, a finding that would have surprised even Ellis (see Mac Giolla & Kajonius, 2019; Schmitt et al., 2017).

[19] Unfortunately, the sample was very small (25 men and 25 women), so the results were far less reliable than assumed at the time. For example, Woolley failed to detect any sex differences in emotion-related measures and used this finding to argue that women's higher emotionality was a baseless stereotype (see below).

with then-current biological explanations of sex differences[20]—including the hypothesis of greater male variability—and concluded with a plea for environmental explanations:

> The biological theory of psychological differences of sex is not in a condition to compel assent. While it is true, therefore, that the present investigation tends to support the theory, it is also true that the uncertain basis of the theory itself leaves room for other explanations of the facts, if there are other satisfactory ways of explaining them.
>
> […] Although the timeworn controversy is far from satisfactory settlement, the results of recent observation of individual development have tended to emphasize more and more the extreme importance of environment. […]
>
> The fact that very genuine and important differences of environment do exist can be denied only by the most superficial observer. Even in our country, where boys and girls are allowed to go to the same schools and to play together to some extent, the social atmosphere is different, from the cradle. Different toys are given them, different occupations and games are taught them, different ideals of conduct are held up before them. […]
>
> It will probably be said that this view of the case puts the cart before the horse—that the training and social surroundings of the sexes are different because their natural characteristics are different. It will be said that a boy is encouraged to activity because he is naturally active […] But there are many indications that these very interests are socially stimulated. […]
>
> There are, as everyone must recognize, signs of a radical change in the social ideals of sex. The point to be emphasized as the outcome of this study is that, according to our present light, the psychological differences of sex seem to be largely due, not to difference of average capacity, nor to difference in type of mental activity, but to differences in the social influences brought to bear on the developing individual from early infancy to adult years. The question of the future development of the intellectual life of women is one of social necessities and ideals, rather than one of inborn psychological characteristics of sex. (Thompson, 1903, pp. 176–182)

Woolley's book exemplifies some then-developing trends that have persisted to this day, including the preference for socialization accounts and the diffidence toward biological explanations. In 1910 and 1914, Woolley wrote two influential reviews of sex differences research in the *Psychological Bulletin*. These reviews foreshadow other important themes—including the growing emphasis on sex similarities within psychology and the increasing divergence between the findings of rigorous research and laypeople's ideas about male and female psychology. For example:

> [T]here seems to be a general trend toward the opinion that mind is probably not a secondary sexual character—in other words that there are probably few if any psychological differences of sex which are of biological origin—a statement which I think holds true in spite of the continued popularity of such books as Mobius' *Physiologischer [sic] Schwachsinn des Weibes* and Weininger's *Geschlecht und Character [sic]*. The tendency to minimize sexual differences is most marked with regard to intellectual processes, the field where most of the experimental work has been done, and in which the practical educational tests have

[20] In particular, Woolley criticized Geddes and Thomson's (1889) theory of the evolution of sex, a then-popular alternative to Darwin's (1871) theory of sexual selection. Many biologists regarded sexual selection theory as dubious until it was formalized by Fisher (1930); in the meantime, there were several attempts to develop an alternative account of the evolution of males and females. Geddes and Thomson's theory was one of those attempts, based on the opposition between anabolic and catabolic processes; in fairness to Woolley, there was plenty to be critical about.

> been made. Even the time-honored belief that men are more capable of independent and creative work is beginning to give way in view of the successful competition of women in graduate work and in obtaining the doctorate [….] The fundamental importance of sexual differences in affective processes and in standards of conduct still commands a larger measure of credence. The world at large is quite agreed that women are to a greater extent than men dominated by emotions, though the only direct experimental evidence does not support this view […]
>
> Finally, one might characterize the drift of recent discussion as a shift of emphasis from a biological to a sociological interpretation of the mental characteristics of sex. The very small amount of difference between the sexes in those functions open to experimentation, the contradictory results obtained from different series of investigations, and the nature of the differences which prove to be most constant, have led to the belief that the psychological differences of sex are of sociological rather than of biological origin. (Woolley, 1910, pp. 341–342)

In 1914, Woolley remarked that psychological research on sex differences was growing so fast that it had become impossible to keep up with all the new literature:

> During the four years since my last review of the literature of the psychology of sex […] the number of experimental investigations in the field has increased to such an extent that whereas it was difficult at that time to find anything to review, it is now impossible to review all I could find. (Woolley, 1914, p. 353)

Compare this statement with the narrative that "up to recent times, psychology appeared to focus almost exclusively on the behavior of men or male animals" or that "most early research never investigated comparisons between women and men at all" (Denmark et al., 2008). It can also be useful to stress that the psychologists of the 1910s were *not* simply concluding that "women were by nature inferior"; on the contrary, Woolley (1910, 1914) listed several areas in which women had been found to consistently outperform men, including aspects of perception, memory, and reasoning.

Psychological research in Europe slowed down during World War I, but there were enough studies to fill regular reviews in the *Psychological Bulletin.* Leta Hollingworth wrote a series of those reviews in 1916, 1918, and 1919. A recurring theme was the variability hypothesis, which Hollingworth herself had critiqued and researched (e.g., Hollingworth, 1914). The data available at this point were contradictory, and opinions on the topic remained sharply divided.[21] As I discuss later, the question of variability would take almost another hundred years to be answered with confidence. This is how Hollingworth concluded her 1919 review:

> The year's work yields nothing consistent as a result of the comparison of the sexes in mental traits. In this respect it resembles the work of other years. Pressey finds that girls excel boys in mental tests at all ages, from 8 to 16 years, inclusive; Porteus finds that boys excel girls at nearly all ages. Pressey finds that boys are more variable than girls; Frasier finds that there are no sex differences in variability. In group after group of superior children, the highest intelligence is found now in a boy, now in a girl. Perhaps the logical conclusion to be reached on the basis of these findings is that the custom of perpetuating

[21] For example, Edward Thorndike was an early advocate of the hypothesis (Thorndike, 1906); Lewis Terman initially argued against it, but changed his mind in his later work (see McNemar & Terman, 1936; Terman et al., 1946).

> this review is no longer profitable, and may as well be abandoned. (Hollingworth, 1919, p. 373)

Like other feminist authors, Hollingworth was acutely skeptical of biological explanations and emphasized the role of environmental differences and the limitations imposed by pregnancy and childcare. By then, this attitude was fairly widespread in academic circles. I do not want to exaggerate the impact of egalitarian ideals on early twentieth-century psychology; especially in applied areas such as clinical psychology and education, it is easy to find influential works full of unsupported speculations about sex differences. A case in point is the often-quoted *Youth: Its Education, Regimen, and Hygiene* by G. Stanley Hall (1906).[22] But I do want to challenge the myth that academic psychology was indifferent or hostile to women until second-wave feminism came about in the 1960s and 1970s.[23]

As literature reviews on sex differences continued to be published regularly, the concerns of the field kept evolving. Allen (1927, 1930) noted the growing interest in sex hormones, fostered by the striking advances in endocrinology that were taking place in the 1920s and 1930s. While the variability hypothesis was still debated, the prevailing opinion was that sex differences are heavily influenced by environmental factors and tend to be relatively small across the board. Allen repeated the same conclusions in both his 1927 and 1930 reviews:

> By way of summary, three points should be noted:
>
> 1. Few, if any, of the so-called "sex differences" are due solely to sex. Individual differences often are greater than differences determined on the basis of sex.
> 2. The social training of the two sexes is, and always has been, different, producing differential selective factors, interests, standards, etc.
> 3. The number of variables which either cannot or have not been controlled hitherto make conclusions uncertain. Among other factors, a more careful definition of terms is needed. (Allen, 1927, p. 301)

Before moving on, I want to briefly discuss Terman and Miles' (1936) seminal work on masculinity-femininity (M-F) as a trait of individual variation. Terman and Miles measured M-F as a bipolar construct, an idea that was to come under fire in the 1970s and be quickly abandoned, only to be rediscovered in the 1990s (more on this below). The point I want to bring up is that, contrary to the received view, Terman and Miles did *not* equate mental health with a rigid identification with one's biologically prescribed role. Instead, they described masculinity and femininity as

[22] Then again, see Thorndike (1906) for a very different perspective on the same issue.

[23] Shields (1975) recounts the same period in the history of psychology, but from the standard feminist assumptions that sex differences are largely socially constructed; that the variability hypothesis (like other biological explanations) was only accepted because it justified women's subordination; that the idea of an evolved "maternal instinct" is nothing but a subtly oppressive fiction; etc. From this vantage point, everything looks much darker. But even then, there is no ground for the narrative that "all psychology was the psychology of men"; and the contributions of Hollingworth, Woolley, and other feminist psychologists were not marginalized, but published in top journals, widely discussed, and accepted by many in the discipline.

continuous rather than mutually exclusive categories and argued that inflexible masculine/feminine roles take a toll on individuals and society:

> Masculinity and femininity are important aspects of human personality. They are not to be thought of as lending to it merely a superficial coloring and flavor; rather they are one of a small number of cores around which the structure of personality gradually takes shape. The masculine-feminine contrast is probably as deeply grounded, whether by nature or by nurture, as any other which human temperament presents. […] Whether it is less or more grounded in general physiological and biochemical factors than these remains to be seen. In how far the lines of cleavage it represents are inevitable is unknown, but the possibility of eliminating it from human nature is at least conceivable. The fact remains that the M-F dichotomy, in various patterns, has existed throughout history and is still firmly established in our mores. In a considerable fraction of the population it is the source of many acute difficulties in the individual's social and sexual adjustment and in a greater fraction it affords a most important impetus to creative work and happiness. The indications are that the present situation, together with the problems it raises for education, psychology, and social legislation, will remain with us for a long time to come.
>
> As long as the child is faced by two relatively distinct patterns of personality, each attracting him by its unique features, and is yet required by social pressures to accept the one and reject the other, a healthy integration of personality may often be difficult to achieve. Cross-parent fixations will continue to foster sexual inversion; the less aggressively inclined males will be driven to absurd compensations to mask their femininity; the more aggressive and independent females will be at a disadvantage in the marriage market; competition between the sexes will be rife in industry, in politics, and in the home as it is today. (Terman & Miles, 1936, pp. 451–452)

This is what Terman and colleagues wrote 10 years later:

> Present-day concepts of sexuality no longer regard maleness and femaleness as mutually exclusive categories. Sex is not an all-or-none affair; masculinity and femininity are relative terms. […]
>
> The biochemical forces which activate masculine and feminine behavior are in some degree present in both sexes. […] As someone has stated it, there are no men, there are no women; there are only sexual majorities. (Terman et al., 1946, p. 955)

With the rise and consolidation of behaviorism, the eclipse of evolutionary psychology at the end of the 1930s (Gillette, 2007),[24] and the ebbing of fist-wave feminism, the 1940s and 1950s were relatively uneventful for sex differences research. The idea that popular stereotypes exaggerate small and inconsequential differences persisted (e.g., Fernberger, 1948); other scholars saw the possibility for a détente between nature and nurture:

> For the present we may well avoid the extreme position common both among laymen and scientists a generation ago, that nearly all sex differences are to be accounted for in terms of original nature, and avoid equally the extreme position which holds that the temperaments of men and women are no more sex-determined than their clothing. Now that feminism is no longer a violent issue, it is becoming possible to examine the picture of sex differences unmoved by emotions deriving from sex rivalry. The physiologist has long

[24] Few know that the term "evolutionary psychology" was not coined in the 1990s (e.g., Barkow et al., 1992), but was already in use in the late nineteenth and early twentieth century. See, for example, Stanley (1895), Howard (1927), and Jastrow (1927). For a historical overview, see Gillette (2007).

> known that woman is something other than a wombed man, the social psychologist is beginning to suspect it, and one dares look forward to a change in the present-day bias of the cultural anthropologists. (Johnson & Terman, 1940, p. 331)

All of this was going to change dramatically, starting with the late 1960s and culminating in the 1970s; so this is where I go next.

The 1970s

The rise of second-wave feminism was not the only historical shift in the psychology of the 1970s. There were also the decline of behaviorism and psychoanalysis; the situationist turn in social and personality psychology; and the (attempted) resurrection of evolutionary psychology on the wings of the sociobiological revolution (see Segerstråle, 2000). The mix was explosive. The moment is best captured by Naomi Weisstein's famous essay *Psychology constructs the female*, first published in 1968:

> It is an interesting but limited exercise to show that psychologists and psychiatrists embrace these sexist norms of our culture, that they do not see beyond the most superficial and stultifying media conceptions of female nature, and that their ideas of female nature serve industry and commerce so well. Just because it's good for business doesn't mean it's wrong. What I will show is that it is wrong: that there isn't the tiniest shred of evidence that these fantasies of servitude and childish dependence have anything to do with women's true potential; that the idea of the nature of human possibility which rests on the accidents of individual development or genitalia, on what is possible today because of what happened yesterday, on the fundamentalist myth of sex organ causality, has strangled and deflected psychology so that it is relatively useless in describing, explaining, or predicting humans and their behavior. […]
>
> [T]he evidence is collecting that what a person does, and who he believes himself to be, will in general be a function of what people around him expect him to be, and what the overall situation in which he is acting implies that he is. Compared to the influence of the social context within which a person lives, his or her history and "traits", as well as biological makeup, may simply be random variations, "noise" superimposed on the true signal which can predict behavior.
>
> […] If subjects under quite innocuous and non-coercive social conditions can be made to kill other subjects and other types of social conditions will positively refuse to do so; if subjects can react to a state of physiological fear by becoming euphoric because there is somebody else round who is euphoric or angry because there is somebody else round who is angry; if students become intelligent because teachers expect them to be intelligent, and rats run mazes better because experimenters are told the rats are bright, then it is obvious that a study of human behavior requires, first and foremost, a study of the social contexts within which people move, the expectations as to how they will behave, and the authority which tells them who they are and what they are supposed to do. […]
>
> Thus, for example, if out of two individuals diagnosed as having the adrenogenital syndrome of female hermaphroditism, one is raised as a girl and one as a boy, each will act and identify her/himself accordingly. The one raised as a girl will consider herself a girl; the one raised as a boy will consider himself a boy; and each will conduct her/himself successfully in accord with that self-definition.

> So, identical behavior occurs given different physiological states; and different behavior occurs given an identical physiological starting point. So it is not clear that differences in sex hormones are at all relevant to behavior. […]
>
> But even for the limited function that primate arguments serve, the evidence has been misused. Invariably, only those primates have been cited which exhibit exactly the kind of behavior that the proponents of the biological basis of human female behavior wish were true for humans. Thus, baboons and rhesus monkeys are generally cited: males in these groups exhibit some of the most irritable and aggressive behavior found in primates, and if one wishes to argue that females are naturally passive and submissive, these groups provide vivid examples. […] [I]n general, a counter-example can be found for every sex-role behavior cited, including, as mentioned in the case of marmosets, male "mothering". (Weisstein, 1971)

Thus, the feminist psychologists of the 1970s recovered the classic themes of the earlier decades (often without knowing; see Shields, 1975), but took them much further in a social constructionist direction (see also Eagly, 2018; Eagly & Wood, 2013). The variability hypothesis was seen as permanently discredited and often brought up as an example of old-fashioned sexist pseudoscience (e.g., Shields, 1975; Seller, 1981; Unger, 1979). The concept of gender crystallized this attitude; to some scholars, it pointed to the socially constructed reality of biological sex and the male-female binary:

> Scientific knowledge does not inform the answer to the question: what makes a person either a female or a male, a woman or a man? Rather, scientific knowledge justifies, appears to give grounds for, and reflexively demonstrates the already existing knowledge that a person is either a female or a male. Biological, psychological and sociological differences do not lead to two non-overlapping categories of people. Rather, the socially shared, common sense, methodical construction of a world of two and only two genders leads to the discovery of biological, psychological and sociological differences.
>
> […] Although it seems that the biological facts have an existence independent of gender labels (there are XY chromosomes, etc. and all these together are labeled "male"), the process, seen through the ethnomethodological approach, is the reverse. […]
>
> The role that biology plays in gender attribution is to provide "signs", signs which serve as good reasons for our attributions. […] In our culture, biological facts give grounds for, and support, the facticity of two genders. At the same time, biology is grounded in, and gets its support from, the basic assumption that there are two, and only two, genders. (McKenna, 1978, pp. 3–8)

But these radical ideas were ahead of their time and did not leave an enduring impression on the discipline. Another flare was Sandra Bem's work on androgyny and psychological adjustment (Bem, 1974, 1975), which proved an empirical dead end and was soon attacked for being insidiously sexist and male-centric (see Lippa, 2001). On the other hand, Bem's argument that masculinity and femininity are not the ends of a continuum, but rather independent dimensions of behavior, made a lasting contribution to the deconstruction of gender (see also Constantinople, 1973). Also, from the ashes of androgyny rose *gender schema theory* (Bem, 1981), which is still a mainstream approach to the development of gender and gender identity (see Blakemore et al., 2009; Liben, 2016).

In terms of staying power, the landmark contribution of this period was probably Maccoby and Jacklin's hugely influential book *The Psychology of Sex Differences*

(1974). The authors collected and analyzed a large number of studies and concluded that only four differences could be regarded as well established, namely, males are more aggressive; females excel in verbal ability; males excel in visuospatial ability; and males have superior mathematical skills. They noted that the evidence was equivocal for sex differences in tactile sensitivity, fear and anxiety, activity levels, competitiveness, dominance, compliance, and nurturant/"maternal" behaviors but dismissed sex differences in sociability, suggestibility, self-esteem, and a host of other traits as "unfounded beliefs." Also, they failed to find consistent evidence of differential socialization in boys and girls, although this particular conclusion is often glossed over.

Maccoby and Jacklin's book cemented the perception that, with very few exceptions, laypeople's ideas about male and female behavior are just groundless stereotypes:

> How is it possible that people continue to believe, for example, that girls are more "social" than boys, when careful observation and measurement in a variety of situations show no sex difference? Of course it is possible that we have not studied those particular situations that contribute most to the popular beliefs. But if this is the problem it means that the alleged sex difference exists only in a limited range of situations and the sweeping generalizations embodied in popular beliefs are not warranted. […] A more likely explanation for the perpetuation of "myths" we believe, is the fact that stereotypes are such powerful things. (Maccoby & Jacklin, 1974, p. 355)

The Psychology of Sex Differences has been canonized as a careful, rigorous, even-handed analysis of the literature of the time. In reality, it was a biased and surprisingly shoddy piece of work. The authors failed to analyze many studies finding significant differences, even though they had cited them in the bibliography; over-interpreted non-significant tests as evidence of no difference, without taking into account statistical power and measurement reliability; largely based their conclusions on studies of young children (12 years old or younger in 75% of the studies); and dismissed several patterns indicative of sex differences with ad hoc reasons. Block (1976) discussed these problems in detail and reanalyzed Maccoby and Jacklin's main findings, reaching dramatically different conclusions. This did not prevent the book from becoming a classic that is still cited to this day, often uncritically.

Where Are We? When *Are We?*

Almost 50 years and two waves of feminism later, what is the state of the field? Evolutionary psychology is hopefully here to stay; but despite some attempts at reconciliation (e.g., Buss & Schmitt, 2011; Campbell, 2006; Nicolas & Welling, 2015) and the contributions of scholars with a distinct feminist perspective (e.g., Fisher et al., 2013; Hrdy, 2009), it continues to attract harsh criticism by feminists outside the field (e.g., Barnett & Rivers, 2004; Fausto-Sterling, 1992, 2000; Fine, 2017; McCaughey, 2007; Saini, 2017). A coherent evolutionary approach

challenges every single one of the preferences that inform the psychology of sex and gender, so there is no resolution in sight. Social role theory is a false compromise, and while I suspect that it will remain popular for some time, it cannot provide the needed common ground (see also Geary, 2021). Like a hundred years ago, sexual selection is the main target of feminist critiques, not just in psychology (e.g., Fine, 2017; Tavris, 1992) but also in anthropology and biology (e.g., Dunsworth, 2020; Fausto-Sterling, 1992; Roughgarden, 2013; see Hankinson Nelson, 2017). Since the basic logic of sexual selection seems to be essentially correct, but most feminists cannot bring themselves to accept it (Vandermassen, 2004), the debate does not advance, and it's déjà vu all over again.

In the meantime, the variability hypothesis—a "pernicious hypothesis" for Noddings (1992) and a "social Darwinist myth" for Denmark et al. (2008)—has been largely confirmed across species (Reinhold & Engqvist, 2013; Wyman & Rowe, 2014). In humans, larger samples and better analytical techniques have shown that males are systematically more variable than females, both in general intelligence (indexed by IQ) and in most specific cognitive skills (e.g., Arden & Plomin, 2006; Baye & Monseur, 2016; Feingold, 1992; He & Wong, 2011; Johnson et al., 2008; Lohman & Lakin, 2009; Machin & Pekkarinen, 2008). The same applies to many physical and physiological traits (Lehre et al., 2009). In the domain of personality, men's scores also tend to be somewhat more variable; the main exception is neuroticism/emotional stability, which shows significantly higher variability in women (see Del Giudice, 2015, 2020; Del Giudice et al., 2018b). Empirical confirmation has not made the hypothesis less incendiary, however. Both Larry Summers (former President of Harvard; see Taylor, 2005) and James Damore (see Anomaly & Winegard, 2020) were ostracized for mentioning greater male variability, among other things; in 2017, a mathematical paper that discussed the logic of the hypothesis (Hill, 2017) was immediately "un-published" after controversy erupted (see Hill, 2018). As I noted earlier, it is still quite possible to publish in top psychology journals without acknowledging the evidence of higher male variability in intellectual abilities.

In psychology, the landmark work of the 2000s was surely Janet Hyde's (2005) paper on the *gender similarities hypothesis*, or the hypothesis that "males and females are similar on most, but not all, psychological variables. That is, men and women, as well as boys and girls, are more alike than they are different" (Hyde, 2005, p. 581). This had also been the message of Maccoby and Jacklin's book, so what was new? First, Hyde relied on data from large meta-analyses instead of individual studies. And second, she used conventional thresholds to sort sex differences into "trivial," "small," "moderate," and "large."

On the positive side, the paper highlighted the importance of quantification and demonstrated the potential of integrating data on a large scale. But the idea of interpreting sex differences automatically and out of context, based on meaningless conventional thresholds, was deeply unfortunate (for extended discussion of why this is the case, see Del Giudice, 2020; Hill et al., 2008). In all likelihood, the paper's visibility has contributed to entrench this mechanical practice even deeper in the literature (e.g., Zell et al., 2015); to illustrate, three of the meta-analyses I surveyed

for this chapter interpreted their findings based on the same thresholds (Kugler et al., 2018; Lauer et al., 2019; Reilly et al., 2019). Other limitations of Hyde's approach include averaging functionally distinct traits within the same category, neglecting measurement error, and failing to consider that differences can cumulate across traits yielding large multivariate distances between male and female profiles (see Del Giudice, 2020; Del Giudice et al., 2012). Be as it may, the conclusion that most sex differences are trivial to small struck a chord, and the paper has become a standard reference in the literature on gender stereotypes (e.g., Ellemers, 2018).

As an aside, Hyde (2005, 2014) recognized that trait variability is often higher in males, even though she downplayed the practical significance of this finding and emphasized the context dependence of sex differences. In Hyde's view, it is not only laypeople who are victim of inflated stereotypes but also scientists—and they should stop caring so much:

> When researchers find a gender difference, they might productively ask themselves, is this important, and why is it important? Are other issues more important?
>
> Nonetheless, research on psychological gender differences will continue for years to come, given many scientists' firm beliefs that such differences exist and are large and the media's insatiable thirst for new findings of gender differences. (Hyde, 2014, p. 3.21)

This attitude toward sex differences is fairly common in the psychological literature. The underlying assumption is that "stereotypes" of large and/or stable sex differences are harmful, to both individuals and society at large (e.g., Barnett & Rivers, 2004; Ellemers, 2018; Gruber et al., 2021; Hyde, 2005, 2014). For example:

> It is time to consider the costs of overinflated claims of gender differences. Arguably, they cause harm in numerous realms, including women's opportunities in the workplace, couple conflict and communication, and analyses of self-esteem problems among adolescents. (Hyde, 2005, p. 590)

I do not dispute that exaggerating sex differences, and depicting them as overly rigid and inflexible, can cause all sorts of problems. But the converse is also obviously true: if there *are* some meaningful and robust sex differences, minimizing or denying them can be just as harmful—for example, by distorting people's understanding of themselves and others, hindering communication between partners and on the workplace, reducing the effectiveness of psychotherapy, and encouraging the adoption of unrealistic or counterproductive policies. The virtually complete neglect of these potential risks—in the face of constant alarm about the dangers of exaggerated stereotypes—is one of the clearest manifestations of ideological bias in this area of research.

The other major theme I have discussed is the deconstruction of gender and sex. Starting from the 1990s, the idea that masculinity and femininity are independent dimensions of variation has been challenged by research showing that, even if M-F is not a simple unitary construct, it is possible to derive robust and meaningful M-F dimensions from patterns of interest and personality (see Lippa, 2001, 2010; Del Giudice, 2020). The more radical project of disrupting the "sex binary" started in the 1970s and was still underway in the 1990s (e.g., Fausto-Sterling, 1993), but did not start to get serious traction until the mid-2010s, when it merged with

fourth-wave feminism and transgender activism. It is still too early to know how psychology will be impacted, but I suspect that future (re)incarnations of this chapter will have an interesting story to tell.

The Other Side of Bias

Before ending this exploration, it is important to consider the possible influence of other kinds of ideology besides feminism and egalitarianism. The polar opposite of cosmic egalitarianism is *anti*-egalitarianism—the belief that groups are naturally unequal, with "superior" groups that deserve to win and "inferior" ones that deserve to lose. Psychologically, this perspective aligns with the trait known as *social dominance orientation* (SDO; see Pratto et al., 1994). I'm not sure if I have ever talked to a single psychologist who held such an anti-egalitarian worldview. On the other hand, plenty of psychologists do not subscribe to cosmic egalitarianism and believe that there are robust—though not necessarily fixed—differences between males and females, which are rooted in our evolutionary history and not primarily caused by socialization. In the feminist literature, this is called "gender essentialism" and viewed as a set of defensive beliefs whose function is to resist social change, foster acceptance of (socially constructed) sex differences, and legitimize the status quo (e.g., Morton et al., 2009; Skewes et al., 2018; Wood & Eagly, 2012).

Naturally, the notion that the status quo is by definition unjust and in need of radical transformation is debatable—unless, of course, one is already an activist. And if one takes an activist perspective, the only real explanation for disagreement becomes *ideological* opposition, with the result that legitimate scientific debates get routinely recast as ideological ones. Reflecting on the influence of feminism in psychology, Eagly (2018) remarked that "ideology is the most difficult of biases to erase because its advocates seldom recognize or acknowledge it" (p. 12). To me, this seems disingenuous: throughout history, feminist scholars have openly acknowledged their ideological motivations and often embraced them with pride.[25] The ideological roots of feminist research are anything but hidden or implicit; the notion that "we are all ideologically biased" has a kernel of truth, but should not be used to suggest false equivalences between approaches that strive to minimize bias and those that seek to amplify it (see Tybur & Navarrete, 2018).

That said, the empirical data do indicate that "gender essentialist" beliefs tend to correlate with more conservative politics and higher SDO in the general population (Skewes et al., 2018). Also, perceiving larger differences between the sexes predicts stronger endorsement of so-called "sexist" beliefs (Zell et al., 2016)—although the latter mainly consist of being critical of feminism, attributing certain positive/negative qualities to women (e.g., good taste, being easily offended), and expressing

[25] To give just one example, Else-Quest and Hyde (2018) advocate a feminist approach to psychology and clearly note that "[f]eminism is a political movement and ideology as well as a theoretical perspective" (p. 7).

protectiveness or romantic admiration.[26] The assumption that "essentialist" ideas about sex differences point to a hidden conservative agenda may explain why academics who are more liberal (in the sense of left-wing) tend to view evolutionary psychology with more skepticism (Buss & von Hippel, 2018, Jonason & Schmitt, 2016; see also Tybur & Navarrete, 2018). As it turns out, however, evolutionary psychologists and anthropologists are just as left-wing as their non-evolutionary colleagues (Lyle & Smith, 2012; Tybur et al., 2007).[27] Almost all my colleagues who study sex differences from a biological perspective are politically liberal and in favor of equalizing opportunities and conditions between the sexes as much as possible. This does not mean that subtle biases and distortions cannot happen; but the suspicion that evolutionary psychologists as a group are motivated by right-wing or anti-egalitarian concerns has no basis in reality.

More generally, the traditions and theoretical commitments of a field can easily create biases that, even if not "ideological" in a strong sense, end up distorting the science produced within that field. For example, the evidence for "human universals" has played a crucial role in lending credibility to evolutionary psychology (see Pinker, 2003). Even if cross-cultural variation is a major topic of research (e.g., Chapais, 2017; Gangestad et al., 2006; Schmitt, 2015; Schmitt et al., 2017), the field as a whole may be unduly biased in favor of constancy and universality, at the risk of discounting change and variability. On the issue of sex and gender, bias can take the form of exaggerating sex differences, downplaying the flexibility of sex roles in humans and other animals, and focusing too much on women's attractiveness and mating while neglecting parenting and post-reproductive behavior (see, e.g., Burch, 2020; Eagly & Wood, 2013; Fisher et al., 2013; Stewart-Williams & Thomas, 2013). While the sex binary (properly understood) is not a myth to dispel but a fundamental

[26] In fact, the questionnaire that is commonly used to measure sexism (the "ambivalent sexism inventory"; Glick & Fiske, 1996) is a textbook example of blatant ideological bias in psychology. Here are some sample items indicating "benevolent sexism":

- In a disaster, women ought not necessarily to be rescued before men (reverse-scored).
- Women, as compared to men, tend to have a more refined sense of culture and good taste.
- Women, compared to men, tend to have a superior moral sensibility.
- No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman.

And some examples of "hostile sexism":

- Feminists are making entirely reasonable demands of men (reverse-scored).
- Many women are actually seeking special favors, such as hiring policies that favor them over men, under the guise of asking for "equality."
- Women are too easily offended.
- Most women interpret innocent remarks or acts as being sexist.

The last item is especially ironic, considering that the questionnaire is full of arguably innocent remarks that are interpreted as indicators of sexism.

[27] To be clear, I do not think this is necessarily a good thing. While evolutionary psychology may be quite effective at limiting the impact of researchers' ideological biases (thanks to the "buffering" effect of strong theory; Tybur & Navarrete, 2018), more political diversity would almost certainly benefit the field and add another layer of protection against conformity and groupthink.

biological reality, it is true that differences and variation in gender identity have not received the attention they deserve from evolutionists. I also think that evolutionary psychologists could do a better job of communicating the nuance of their theories and findings to the public, for example, by putting more emphasis on within-sex variation and context dependence. As usual, the best antidote to bias is open conversation (see Del Giudice et al., 2018a; Fine et al., 2018; Fine, 2020; von Hippel et al., 2020). The worst aspect of pervasive ideology is the way in which it suppresses dialogue and ensures that some ideas will not be heard and discussed.

Conclusion: What's Next?

This is the point in the chapter where one looks at the future to offer suggestions and advice. I am writing this chapter at the end of 2020, as political/ideological tensions in the USA and other Western countries are reaching a peak of intensity. This may be just about the worst possible time to make predictions; but some trends seem reasonably clear and do not make me optimistic in the short run. At least for a while, egalitarian and anti-biological biases in psychology are going to get stronger, making universities and academic journals more hostile toward the "wrong" kind of research. Anecdotes from colleagues and in the news suggest that academic censorship is tightening, both before publication (ethical reviews, journal reviews, editorial decisions) and after (retraction campaigns; e.g., Reynolds, 2020). Even *teaching* about certain sex differences is becoming difficult or impossible; the speech codes of many American universities now proscribe "gender harassment," an ill-defined concept that can be expanded to include any form of unwelcome "stereotyping" (e.g., Leskinen & Cortina, 2014). On the positive side, researchers have the option to reach the broader public through online videos, podcasts, blogs, and magazines, effectively creating a sort of academic counterculture. While this is not ideal (and online channels are also vulnerable to censorship), it may help the field survive a spell of ideological suppression. Another reason for hope is that large, information-rich datasets (often from multiple countries) are becoming increasingly common and easy to access. In this sense, there has never been a better time to study sex differences and similarities; even in a worsening ideological climate, I expect to see a lot of exciting new research—both by academics and by independent researchers.

Is there anything that can be done right now to mitigate bias? As I noted earlier, conversations across scientific/ideological barriers are extremely important and should be encouraged whenever possible. Recently, noted feminist psychologist Alice Eagly argued that her colleagues should break with a tradition of diffidence and start considering how biological influences contribute to shape behavior in males and females (Eagly, 2018). Unfortunately, mainstream feminism is moving fast in the opposite direction; also, some of the issues at stake (e.g., the role of sexual selection) have been contentious for more than a century—a fact that does not inspire hope for a resolution (Vandermassen, 2020). On the other hand, it is possible that more scholars will become frustrated with the growing polarization in their

field and begin to seek dialogue with "moderates" on the other side of these issues. Facilitating these exchanges should become a priority for non-partisan organizations, societies, and journals.

After spending some time on textbooks, I believe there are many untapped opportunities to combat bias at the level of introductory courses. A slanted introduction to the field—one that ignores or downplays sex differences and fails to provide the conceptual tools to make sense of them—can leave a lasting impression that is hard to correct later on (if it gets corrected at all). One option for sex differences researchers is to contact the authors of popular textbooks to offer feedback, advice, and links to useful teaching materials (e.g., videos, interviews, exchanges between researchers with different viewpoints). Another option would be to produce brief "supplements," written in a textbook style and designed to balance out the standard narrative that students are likely to encounter. Supplements of this kind could be easily made available online and disseminated via social media and other channels (the same approach might work for other topics covered in this volume). There are probably many other ways to improve the curriculum and give students a fuller picture of the field while avoiding the pressures and compromises faced by textbooks authors and course instructors.

As I have stressed through the chapter, ideological biases in the psychology of sex and gender are deeply entrenched and as old as the discipline itself. Whatever happens in the next years, quick and simple fixes are not going to work; making real progress will require courage, patience, focused effort—and all the creativity we can muster.

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