

Sex, lies and gender

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Browne¹ (*this issue*) argues that what may appear to be a benevolent practice—disclosing the sex of a fetus to expecting parents who wish to know—is in fact an epistemically problematic and, as a result, ethically questionable medical practice. Browne worries that not only will the disclosure of fetal sex encourage sex-selective abortions (an issue we will not take up here), but also that it will convey a misleading and pernicious message about the relationship between sex and gender. More specifically, she contends that the practice of disclosure is problematic because (1) it purports to establish the gender of the developing baby based on information about the baby's sex, whereas this is not a warranted inference because while sex is determined by biological factors, gender is determined by social factors and (2) it conflates (biological) sex with (social) gender or encourages such conflation or reduction and thereby promotes 'essentialistic' thinking about gender that is closely linked to sexism and social injustice. If (1) is true, then disclosing fetal sex amounts to misinforming or misleading prospective parents—and since misinforming patients is wrong, the act of disclosing is also wrong. However, beyond the wrongs of misinforming patients, the practice also perpetuates the harms associated with a rigidly gendered society through endorsing the message in (2), thus lending the authority of the medical profession to the gender-essentialist ideas that have underpinned, and continue to drive, sexism and social injustice. This analysis leads Browne to recommend that clinicians be prohibited from informing parents about the sex of their developing fetus.

We agree with Browne that gender essentialism—the notion that 'femaleness' and 'maleness' carve out distinct natural classes with innate, immutable properties—is not only a false metaphysical thesis, but also a pernicious idea insofar as the sexist attitudes it fosters motivate policies that systematically violate the human

rights of women, as well as those of the LGBTQ community. However, we do not think that the disclosure of fetal sex misinforms prospective parents about the gender of their baby, nor do we believe that such disclosure presupposes or promotes gender essentialism properly understood.

In parallel and contradistinction to Browne's two-pronged argument summarised above, we will argue (1*) that gender does in fact have a causal basis in biological sex where the relevant sense of 'causal basis' is suitably fleshed out, and that as a result of this causal basis, sex provides highly predictive information about gender outcomes across a wide range of developmental environments; and (2*) that we can hold (1*) without being committed in any way to gender essentialism, reductionism, determinism or rigidity, or to the notion that cultural factors play relatively minor causal roles in gender outcomes. Indeed, Browne's analysis of the disclosure problem shows that she is implicitly committed to the very essentialist views of human biological development that critiques of gender essentialism should aim to combat.

SEX IS PREDICTIVE OF GENDER IN CURRENT DEVELOPMENTAL ENVIRONMENTS

Browne argues, in essence, that sex is neither probative nor predictive of gender, since gender is not caused by biological factors like sex; rather, she contends, gender merely *correlates* with biological factors for a host of contingent social reasons. From this, she concludes that relaying information about sex when it will be reasonably misinterpreted as information about gender, or making explicit gender predictions based solely on information about sex, amounts to misinforming expecting parents and as such is *prima facie* unethical. This argument is flawed, however, because it fails to acknowledge the predictive value of correlational information, and because it dismisses too quickly the possibility that biological sex is *a* cause (albeit not *the* cause) of gender outcomes in a broad range of developmental environments, and that this causal relation explains the predictive value of sex vis-à-vis gender in those environments. We will unpack each of these charges in turn.

First, if the aim of a biomedical diagnosis is to make an accurate prediction with regard to some future biomedical outcome, then correlational information may be a sufficient basis on which to do so. While it is true, of course, that causal information can enhance predictability, and that correlation does not imply causation, it is equally clear that causal information is not a precondition for accurate prediction. Consider, for example, the relation between barometers and storms: We can accurately predict the occurrence of a storm by reading a barometer, even though the barometer reading is causally irrelevant to, and does not explain, the occurrence of the storm. In the same way, we could predict gender on the basis of information about sex, even if it were the case, as Browne argues, that sex is not a cause of gender in any relevant sense of causation. Barometers, of course, can be faulty, and weather systems are to some degree stochastic—as a result, barometer recordings do not correlate perfectly with the occurrence or non-occurrence of storms. Nevertheless, barometer readings are highly predictive, and no one should be accused of promulgating misinformation for predicting a storm on the basis of a proper barometer reading simply because the barometer is not the cause of the storm or because the predictions have a nontrivial rate of error.

And yet that is precisely what Browne is arguing in the context of sex and gender. Sex does not correlate perfectly with gender, but sex is demonstrably predictive of gender, and highly so given that the vast majority of adults report identifying as cis-gender (ie, their gender identity conforms to their birth sex). It is likely that similarly robust correlations between sex and gender are obtained where gender is measured as a function of reported behaviour rather than reported self-identification. Uncertainty about the causal aetiology of gender does not undermine this predictive success. To the extent that sex is predictive of gender, the medical disclosure of fetal sex is informative about the likelihood of particular gender outcomes, and thus it is not misleading. Browne is obviously correct in asserting that 'sex fail[s] to guarantee gender'. The probability of certain gender outcomes given certain sex outcomes will always be less than unity (0 or 1), due to the plasticity of human gender identification and its partial decoupling from biological sex. But medical predictions are not misleading simply because they are grounded in intermediate probabilities, as is typically the case in the stochastic realm of health and disease.

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Therefore, even if we grant Browne's claim that there is 'no evidence to support the assumption that biological components cause gender differences', this does absolutely nothing to undermine the predictive value of sex with respect to gender outcomes. This is not, however, to say that the predictive value of sex vis-à-vis gender would not change were the social developmental environment different. If social constraints on gender expression were significantly relaxed, or if the disassociation of sex and gender were actively encouraged, then sex at birth could cease to correlate strongly with gender identity and expression. But *in the current range of developmental environments in which medical predictions are made*, the predictive value holds firm and thus the misinformation claim fails.

SEX IS A CAUSE OF GENDER IN CURRENT DEVELOPMENTAL ENVIRONMENTS

Browne might respond to the above points by arguing that fetal sex disclosure is problematic not because it fails to track statistical regularities, but because it fosters the belief that biological sex is a *cause* of gender, whereas it is not—and further, that the belief that biology is a cause of gender contributes to gender-essentialist beliefs that underpin sexism, which in turn results in oppression and injustice. In fact, we think that sex is a cause of gender on any plausible account of causation that is currently on offer in the well-developed literature on causation; what's more, it is *in virtue of this causal relation* that sex is highly predictive of gender in current developmental environments. Crucially, the notion that (biological) sex is a cause of gender is consistent with cultural factors playing very substantial, difference-making causal roles in the development of gender identity and its associated expressions.

Why does Browne think that the literature shows more or less decisively that sex is not a cause of gender? She invokes evidence from social psychology, in particular work on stereotype threat and implicit bias, to argue that social factors greatly influence gender identity and expression. Conversely, she points out, neither neurobiology nor molecular biology has demonstrated evidence of a sex-gender link. Research aimed at identifying structural or functional differences between male and female brains has indeed produced equivocal answers (compare refs. 2 with 3 and 4), and it is well known that karyotypes do not guarantee that a baby will have the sex organs, sexual

orientation or gender identity typically associated with its chromosomal makeup. On this basis, Browne concludes that gender is (very likely) non-biological and is (certainly) socially produced.

There are two chief problems with this line of reasoning for purposes of assessing the biological causes of gender. First, biological factors that bias gender outcomes need not produce discernable differences in structure, neuronal density or activation patterns in male and female brains; by the same token, discernable differences in brain structure, organisation and activation patterns between male and female brains can be due to ontogenetic effects, resulting (eg) from differential learning environments that reflect culturally scaffolded gender roles. It is one thing to claim that neurobiological evidence for the biological basis of gender is currently inconclusive; it is quite another to infer from the equivocal nature of this data source that there is (very probably) no biological basis of gender.

Second, the presence of certain genes rarely guarantees the development of particular phenotypes—rather, they contribute to the likelihood of certain trait outcomes, which is affected by a complex interaction of genetic and non-genetic factors over the course of ontogeny. As with virtually all biological traits, variation in gender phenotype is to be expected, and such variation is in no way indicative of the lack of biological causes. Gender is no more non-biological simply because it is shaped by environmental factors than is a trait like height: height outcomes are affected by genetics and epigenomics and also by postnatal nutrition practices, which are in turn shaped by cultural norms, institutions and technologies. Though we do not know the degree to which sex contributes to the development and maintenance of gender outcomes or the precise causal pathways through which this occurs, we can safely conclude that genetic factors contribute to the development of different sexual morphologies, which then interact with social ecologies to give rise to gendered identities and expressions.

Thus, there is a very clear sense in which sex (understood as chromosomal makeup and sexual morphology) is a cause of gender outcomes in current developmental environments. We can make this more precise by formulating the relation in terms of a standard counterfactual account of causation, according to which some variable X is a cause of some outcome Y if and only if changing/manipulating/intervening on X would

(statistically) result in a change in Y, holding all other variables constant. Holding current developmental environments fixed, if the sex of a baby were to change, then the probability of that baby developing a particular gender identity would also change, and significantly so, indicating that biological sex is a significant cause of gender. This may be because biological aspects of sex bias those gender outcomes independently of culture, or it may be because cultural forces act on sex differences to reliably produce those outcomes or (more probably) because of some combination of the two. Whatever the aetiology of gender outcomes, in the developmental environments in which the medical diagnosis of fetal sex is actually made, sex is a straightforward cause of gender. What's more, sex is a *difference-making* cause of gender in such cases, since it figures in explanations of gender differences in populations in which fetal sex diagnoses are made. Note that the particular properties associated with a given gender could change radically from culture to culture, and yet sex would still be a difference-making cause of gender in each case so long as cultures reliably produced differential gender roles. Again, this is not to say that very different developmental environments would not result in very different gender outcomes, including outcomes whose likelihoods are not affected by biological sex. It is instead to say that in the current range of social and biological environments, sex is a difference-making cause of gender.

At this point, Browne might concede that sex is both predictive and a difference-making cause of gender in *current* developmental environments, but argue nonetheless that casually associating sex with gender obscures the contingent relationship between the two. This relationship is contingent, she might argue, in the sense that cultural inputs interact with sex-based differences to produce the current distribution of gender outcomes—and the fact that different gender outcomes can be produced by different cultural inputs shows that culture, not biology, is the relevant difference-making class of causes. Indeed, she might propose an even stronger sense of contingency in relation to gender outcomes: namely, that cultural forces arbitrarily impose gender outcomes on top of sex differences—outcomes that could easily have been otherwise and that could have taken almost any form. We think there are good theoretical and empirical reasons to doubt that the social construction of gender is contingent in this more radical way, but making this

case would take us well beyond the scope of this Response. In any event, we should not lose sight of the quarry here, which is the argument that healthcare professionals misinform patients when they disclose fetal sex or predict gender based on sex. Even if gender outcomes were arbitrarily culturally constructed, this would do nothing to undermine the predictive value or casual role of sex vis-à-vis gender in current developmental environments, and thus the medical disclosure of sex would not misinform or otherwise mislead prospective parents about the likely gender of their offspring.

FROM BIOLOGICAL CAUSES TO GENDER ESSENCES

Even if sex is predictive of gender and sex plays a causal role in gender outcomes, it remains an open question whether fetal sex disclosure contributes to gender-essentialist beliefs and the harmful practices they plausibly foster. Although Browne does not explain how imputing biological causes to gender promotes gender essentialism, we can begin to see how such a story might be sketched by looking at her analogy between gender and race—two categories that have served as the basis of political exclusion and social oppression.

Browne argues that just as we do not take being black in America to be a cause of increased risk of incarceration, so too ought we not take sex to be a cause of gender outcomes. Doing so, she argues, would have the effect of shifting our focus away from the systemic problems that are responsible for unjust social outcomes. The problem here, however, is that the word ‘responsibility’ has both causal and normative connotations, and in effect, Browne is smuggling normative assumptions into her operative notion of causation. If being black in America makes one a greater target of police scrutiny and mistreatment and subject to more frequent prosecutions, convictions and harsher penalties in the wider criminal justice system, then being black in America is in fact a cause of increased risk of incarceration in America. It may not act as a similar cause in other societies, or in local pockets within American society, but at certain statistical grains the causal relation holds. As with gender, race is the

product of specific biological traits interacting with cultural institutions to bias the production of certain outcomes—some of which we may rightfully deem unjust. Obviously, to say that race or sex is the cause of certain unjust outcomes in a given environment is not to say that those outcomes are in any way justified or that victims are responsible for their own oppression—nor does it imply that race or sex would not produce different outcomes in different (eg, more just) social settings.

It should be clear from the above discussion that the fact that there are biological causes of gender in no way implies that these causes are rigid, or that cultural inputs are unimportant, or that gender is fixed from birth as a result of biological sex. By implicitly taking biological causes to have such implications, Browne is in effect endorsing the very biological essentialism that her policy recommendations aim to remedy. Even more basically, Browne never makes it clear precisely how disclosing a fetus’s sex to expecting parents, whether through prenatal blood test or standard ultrasound (to which her analysis equally applies), reinforces gender-essentialist intuitions. Granted, disclosing fetal sex does nothing to combat unwarranted gender-essentialist intuitions where these exist, but, then, neither does simply denying parents accurate information about the likely gender of their baby. Parents will learn the sex of their baby in due course anyhow, and, if they are so inclined, raise their child in gender-rigid ways from birth.

Clearly, a baby’s sex is considered an important bit of information by many prospective parents, and the importance attached to information about sex may be attributed to its gender-predictive value rather than its gender-essentialist connotations. Instead of denying access to this information, one option to discourage gender-essentialist inferences would be to require that in the context of disclosing fetal sex, healthcare professionals provide counselling about the relation between sex and gender—akin, perhaps, to forms of genetic counseling. Nevertheless, it is difficult to imagine how such counselling might go, given that there is no broad agreement about the properties that make up gender or even whether gender is a

legitimate category—let alone any consensus on the aetiology of particular gender identities or characteristics.¹ Indeed, given the disagreement surrounding the concept of gender, the very question, ‘Is there a biological basis of gender?’ is itself vastly underspecified. Philosophical and scientific debates over the nature of gender and its aetiology should continue; but it’s not clear that the clinical setting surrounding a pregnancy is an appropriate venue in which to hash these questions out.

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REFERENCES

- 1 Browne TK. Why parents should not be told the sex of their fetus. *J Med Ethics* 2017;**43**:4–9.
- 2 Baron-Cohen S. The extreme male brain theory of autism. *Trends Cogn Sci* 2002;**6**:248–54.
- 3 Joel D, Berman Z, Tavor I, et al. Sex beyond the genitalia: the human brain mosaic. *Proc Natl Acad Sci USA* 2015;**112**:15468–73.
- 4 Fine C. *Delusions of gender: how our minds, society, and neurosexism create difference*. New York: W. W. Norton & Company, 2011.
- 5 Haslanger S. Gender and race: (what) are they? (What) do we want them to be? *Nous* 2000;**34**:31–55.
- 6 MacKinnon C. *Feminism unmodified*. Cambridge: Harvard University Press, 1987.
- 7 Bach T. Gender is a natural kind with a historical essence. *Ethics* 2012;**122**:231–72.

¹Views on gender run the gambit, from realist to eliminativist, from social constructivist to essentialist. Compare, for example, the views in refs. 5–7