



Feminists wrestle with testosterone: Hormones, socialization and cultural interactionism as predictors of women's gendered selves [☆]



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ABSTRACT

Sociology of gender has developed beyond a personality-centered idea of “sex-roles” to an approach that stresses interaction and social structure. At the same time, there has been a concurrent development in the psychological sex-differences and medical literatures toward including the biological bases of sex-typed behavior and gender identities. In this paper, while we conceptualize gender as a social structure, we focus only on the individual level of analysis: testing the relative strength of (maternal circulating) prenatal hormones, childhood socialization, and the power of expectations attached to adult social roles (cultural interactionist) as explanations for women's self-reported feminine and masculine selves. Our findings are complex, and support some importance of each theory. Prenatal hormones, childhood socialization, and cultural interactionism were all influential factors for gendered selves. While cultural expectations predicted only feminine selves, prenatal hormones were more robust predictors of masculine sense of self. While personality may be a relatively stable characteristic influenced by the body and childhood socialization, our results reinforce the importance of studying how the social world responds to and reinforces gendered personality.

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1. Introduction

A burgeoning literature on gender and embodiment (e.g., [Crawley et al., 2008](#); [Lorber and Moore, 2010](#); [Shapiro, 2010](#)) illustrates that feminists take bodies seriously. Feminist scholars have argued that gendered cultural beliefs influence not only knowledge about bodies, but our physical bodies themselves ([Lorber and Moore, 2010](#)). What feminist social scientists have done less well, if at all, is to tangle with biology, to directly engage with research that claims biological factors at least partly determine gender itself. Perhaps, feminists worry that any nod of the head to biology will backfire, with the long history of *biology as destiny* being used to justify sexism. As feminists, we suggest instead that sticking our collective feminist heads in the sand is an abdication of responsibility, both scientific and political (see [Fine et al. \(2013\)](#) for a similar argument

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about popular and scientific treatment of the study of sex differences). It is vital that all social scientists understand all possible processes by which gender inequality is produced and reproduced. In this paper, we build on other sociological work concerned with integrating biological and social processes (e.g., Bearman and Bruckner, 2002; Freese et al., 2003; Perrin and Lee, 2007). We do so by bringing a feminist lens to cross-disciplinary debates about the causal mechanisms that produce gendered women and men in an attempt to bridge an unnecessary gap in feminist scholarship. We postulate an inclusive model for explaining how a small sample of women describes themselves with traits usually associated with masculinity and femininity. Our model tests the relative importance of hormonal, socialization, and cultural interactionist influences on women's descriptions of their personality. In short, we demonstrate how sociology of gender concerned with inequality can wrestle seriously with possible biological influences on gendered selves. Science demands that the scientist engage all plausible explanations in order to more fully answer a given question. We suggest that feminist sociology, indeed all of sociology interested in gender inequality, not only can, but should, wrestle with testosterone.

2. Review of the literature

In contemporary sociology, gender is usually understood as a social structure embedded in the individual, interactional, and institutional dimensions of our society, constantly shifting and being re-negotiated (Connell, 1987; Lorber, 1994; Martin, 2004; Risman, 2004; Risman and Davis, 2013). When gender is so conceptualized, there are clearly consequences at the individual level of identities or personalities (the self), gendered expectations that are accompanied with rewards and sanctions, and macro organizational and ideological components. This multi-level conceptualization of gender is useful for empirical modeling because it allows for consideration of causal relationships within and across levels of analysis. In this paper, we focus our analysis at trying to explain only gender at the individual level, manifested in gendered selves, and measured here as both feminine and masculine personality. We do this to enter the conversation with researchers who study gendered (or sex-typed) personalities and behaviors with more psychological and physiological foci. While we restrict our empirical analysis to predicting gender *at the individual level*, we include interactional and institutional levels of gender as a social structure as predictor variables. Below we present three interrelated causal processes hypothesized to produce gendered personalities: prenatal hormones, childhood socialization, and cultural interactionism.

2.1. Influences of prenatal hormones on gendered selves

Brain organization theory (Phoenix et al., 1959)¹ suggests that fetal hormones, typically during the second trimester of gestation, shape the brain itself: increased exposure to androgens is thought to shape post-natal behavior in a more male sex-typed direction. The amount of *in utero* SHBG (Sex Hormone Binding Globulin) is thought to facilitate or inhibit the androgenization of the fetal brain, while testosterone would directly influence the androgenization of the fetal brain. Increased levels of SHBG would mean less androgenization of the fetal brain and as such, a greater likelihood of more female sex-typed behaviors. Researchers have used both fetal testosterone and SHBG (Grimshaw et al., 1995; Knickmeyer et al., 2005) and maternal circulating testosterone and SGBG (Hines et al., 2002; Udry, 2000; Udry et al., 1995) to test this theoretical claim.

Finegan et al. (1992) found hormonal influences on some of girls' cognitive abilities but not on boys. Another study found prenatal hormone levels related to girls' but not boys' pre-adolescent gendered behavior (Hines et al., 2002). Auyeung et al. (2009) found that fetal testosterone measured directly from a woman's amniotic fluid was positively correlated with male-typical scores on a standardized questionnaire and sex-typical play in both boys and girls, although neither Grimshaw et al. (1995) nor Knickmeyer et al. (2005) found an association between hormone levels in amniotic fluid and sex-typed play. Udry (2000) found that increased levels of (maternal circulating) SHBG led to a greater likelihood of a woman reporting feminine behavior in adulthood. Research on children with genetic and chromosomal inconsistencies has suggested that prenatal hormone levels may affect gendered play (Hines, 2006; Meyer-Bahlburg et al., 2006). These and other individual studies report correlations between prenatal hormones and a variety of sex-typed behaviors and personality factors. There are clearly complex and alternative pathways through which hormonal factors may influence individual selves and choices. In this paper, we are only attempting to measure whether the level of maternal circulating testosterone and/or SHBG in the second trimester of gestation leads to more feminine or masculine personalities in women later in life.

While the studies above have been well-cited, there is still much we do not know about the strength of the relationship between prenatal hormones and any post-natal behavior or predispositions (Eliot, 2009; Fine, 2010; Jordan-Young, 2010). Jordan-Young (2010) argues that the research reporting significant differences in the brain organization of women and men is so flawed as to be inconclusive. Given that brains, as well as hormones measured after birth, are themselves malleable and constantly influenced by culture, experiences and expectations, tests of brain organization theory cannot be performed in absence of data on the social (lived) experiences of individuals (Fine, 2010). Indeed, Cohen-Bendahan et al. (2005) argue that the mechanisms through which maternal hormones may influence children's (and subsequent adults') behaviors are social and environmental. They write, "A woman with relatively high testosterone may interact differently with her daughters than a woman with relatively low testosterone, for example, by being interested in male-typical activities herself and encouraging her daughter to play with boys' toys" (2005:366). This is especially relevant as, they suggest that their research

¹ See Jordan-Young (2010), especially chapter two, for a thorough discussion of the application and extension of this theory to humans.

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