

## Viewpoint: Social science dogma claims gender roles shape human sex differences but most theories as to why fall short

**S**cholarly debate over the magnitude and origin of human sex differences is seemingly interminable. As one might imagine, the arguments are often quite acrimonious, and the associated positions differ sharply in terms of the relative focus on social or biological contributions to sex differences. The prevailing view in the social and behavioral sciences is that human sex differences are typically small in magnitude, largely social in origin, and driven by gender roles (below).<sup>[1], [2]</sup> The proponents of this view will give ground to biology for traits that are all but impossible to refute, such as the sex difference in height, but quickly dismiss these as being of trivial importance in the modern world. The gender roles explanation of sex differences enjoys wide popularity inside and outside of academia, a level of acceptance that qualifies—given abundant contradictory evidence—as one of Mackay's extraordinary popular delusions.<sup>[3]</sup>



Women are traditionally shorter than men.

Here, I describe how gender roles are thought to shape human sex differences and why these theories fall short. I illustrate the latter using the social development and play patterns of boys and girls, because these are thought to result from the sex-typed beliefs and behaviors of parents, advertisers (e.g., of toys), and other people (e.g., teachers). More critically, these early sex differences, and any social influences on them, are thought to place children on a trajectory that will perpetuate stereotyped sex differences in adulthood, such as more men than women becoming engineers. One associated and rather hubristic belief is that social and psychological sex differences can be eliminated by changing young children's beliefs about stereotypical gender roles and by encouraging them to, among other things, engage in gender neutral play and play that is more common in the opposite sex.

## Gender roles

People have many stereotypes about boys and men and girls and women and most of them are accurate and, if anything, underestimate the magnitude of actual sex differences.<sup>[4], [5], [6]</sup> The key question is whether these stereotyped beliefs create a self-fulfilling prophecy or are largely a description of sex differences that children and adults have observed in their day-to-day life.

For many theorists, these stereotypes are a self-fulfilling prophecy that operate through a system of beliefs called *gender roles*. These encompass the behaviors, attitudes, social expectations, and social position of men and women in most societies.<sup>[7]</sup> In a very influential theory, Eagly and her colleagues proposed that gender-role beliefs include descriptive and injunctive norms.<sup>[2], [7]</sup> The former are descriptions of stereotypical sex differences and the latter are expectations about how boys and girls and men and women *ought* to behave. Both types of norms are organized, in part, by sex differences in communion and agency. Women have, on average, more communal traits than do men, as “manifested by selflessness, concern with others, and a desire to be at one with others,” whereas men have, on average, more agentic traits than do women, as manifested by “self-assertion, self-expansion, and the urge to master.”<sup>[7]</sup> (p. 16)

The argument is that sex differences in communion and agency are influenced by the different social and economic roles that women and men occupy in most if not all societies to varying degrees. Of particular importance is women's greater involvement in domestic activities, such as childcare, and men's greater involvement in paid employment or physically-demanding resource acquisition (e.g., hunting). These roles in turn are influenced by a combination of physical sex differences, contextual factors, and modes of economic activity (e.g., agriculture). One result of the sex difference in agency is that more men than women come to occupy high-status occupations and key political positions.

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A core argument is that the greater social status of men than women (on average) not only reinforces the communal and agentic roles of women and men, respectively, but influences the emergence of associated sex differences—through injunctive norms—in social behaviors.<sup>[8]</sup> Granted, gender-role theorists acknowledge that many factors contribute to these sex differences, but the gist is that most of them are caused by adherence to injunctive norms.<sup>[7]</sup>

In theory, women and men use these norms to evaluate their own social behavior and to keep it in line with social expectations, as well as to evaluate the behavior of other people. It is not simply that boys and girls internalize injunctive norms and apply them to their own behavior, but that, in addition, other people mete out rewards and punishments for adherence to and violations of them. One problem with this argument is that sex-typed stereotypical behaviors are found across cultures, including those without any explicit descriptive or injunctive norms.<sup>[9]</sup> Gender role theories can be contorted to account for these universal human sex differences, but no amount of contortion can wrap itself around these same sex differences in other species.

As with humans, males are more agentic in the vast majority of species due to the demands of competition with other males to obtain the status or resources needed to attract mates or to meet the mating demands of females.<sup>[10], [11]</sup> When offspring need parenting, females are typically the ones to provide it. This inherently communal suite of behaviors is perforce different in female and male mammals and is well documented in primates.<sup>[12], [13]</sup>

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The argument that sex differences are largely the result of injunctive norms has wide appeal because

such theories create an illusion of control and are more politically palatable than a substantive biological contribution to them. If gender-role theories were largely correct, then all sex differences in social status, social behavior, and so on can be potentially eliminated by modifying the social expectations for boys and girls and thus eventually men and women.<sup>[14], [15]</sup> Sex differences in children's social development and early play patterns nicely illustrate both the attempt to socially impose this vision on other people and why doing so is akin to walking upstream. Some progress can be made with continual effort, but once these are relaxed human nature washes it away.

## **Children's play**

In some European countries, such as Norway and Sweden, the laudable goal of gender equality is at the forefront of national policy,<sup>[16]</sup> but the devil is in the details. The focus is typically on equality of opportunity, but this often morphs into equality of outcomes, such as equal numbers of men and women as college professors (an agentic occupation) and women and men devoting equal time to communal activities (e.g., childcare).

One way to achieve this vision, according to the gender egalitarians, is to disrupt the development of sex-typed behaviors and beliefs when children are young, often as soon as they begin some type of formal schooling; kindergarten teachers "must continually [analyze] their own actions so that stereotypical gender roles can be counteracted in order to break ongoing gender role practices and thereby facilitate change within education."<sup>[17]</sup> (p. 101) In effect, the goal is to change descriptive and injunctive norms such that boys and girls and men and women will eventually become psychologically, socially, and behaviorally indistinguishable.

egelia stockholm

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Gender neutral preschool in Stockholm. Credit: Egelia

Ironically, these same policy documents promote children's agency or their ability to pursue their own interests. Yet, when children express their agency in ways that conform to stereotypical beliefs and behaviors, such as boys engaging in more intense physical activity than girls, adults need to intervene to eliminate the associated sex differences. The most consistent result of such interventions, I suspect, is frustrated children who are asked to engage in activities that they do not find particularly interesting. It is probably just as frustrating for teachers who are tasked with ensuring equality of interests and activities of the girls and boys in their care.

A brief foray into sex differences in social development illustrates that children themselves are the primary impediment to the achievement of this utopian vision. They segregate themselves and create boy and girl cultures. The segregation occurs independently of adult interventions and is one of the most consistently found features of children's behavior.<sup>[18], [19], [20]</sup> Children begin to form these same-sex groups before they are three years old and do so with increasing frequency during childhood. In the context of these

cultures, children learn to cope with same-sex social dynamics and engage in the sex-typical activities of the adults in their culture. Children are not simply imitating sex-typical behavior or responding to injunctive norms, as they form the same types of segregated cultures in societies in which women's and men's social and economic worlds overlap.

In the context of these cultures and even before they consistently emerge, there is very little overlap in boys' and girls' suites of associated play preferences and activities,<sup>[21], [22], [23]</sup> including differences in the frequency of engagement in rough-and-tumble play, team sports, and doll and family play, among others. Gender scholars acknowledge some biological influences (e.g., prenatal exposure to sex hormones) on the developmental emergence of these sex differences, but at the same time argue that social influences are of overriding importance. The basic argument is illustrated by Dinella and Weisgram's summary of a series of articles on the relation between parents' gender schemas (e.g., stereotyped beliefs) and their children's toy preferences and play behavior:

we gather together cutting-edge research on the factors that affect gender differences in children's toy interests, how subtle gender-related messages affect children's performance and behaviors, and *how adults create these gender-related messages and affect children's interests*.<sup>[24]</sup> (p. 253; italics added)

The irrational exuberance of these types of causal claims must, however, be tempered by reality. To be sure, there is a relation between parental stereotypes and prejudices and those of their children, but this is primarily for attitudes (e.g., beliefs about men's and women's behavior) and does not extend to sex-typed interests and behaviors.<sup>[25], [26]</sup> The sex-typed toy preferences, for instance, are very large and here there is little relation between parents' sex-typed beliefs and their children's play interests.<sup>[26]</sup>

In fact, children's explicit knowledge of descriptive and injunctive sex-typed norms is only weakly related to their actual play behavior and social activities.<sup>[27]</sup> Children raised by egalitarian parents who actively discourage sex typing have children with less stereotyped beliefs than children raised in other types of families. However, the toy and play preferences of these children are sex-typical and do not differ from those of children raised by parents with stereotyped beliefs.<sup>[28]</sup> Weak social influences on many developmental sex differences are also illustrated by studies of biological males who had pelvic birth defects and reconstructive surgery that resulted in female genitalia.<sup>[29]</sup> All of these children were raised as girls, but they all reported male-typical play and interests (e.g., wrestling, ice hockey) and none of them reported much engagement in female-typical play (e.g., with dolls). Eight of 14 children who were raised as girls eventually changed to a male identify; five retained a female identity and the other refused to discuss it.

These same basic sex differences are found in most species that engage in play. One of the most consistent of these is play fighting, which is clearly an agentic activity; differences are also common for play parenting, a communal activity. The sex differences in play fighting track sex differences in the form and intensity of same-sex competition—largely male-male competition for social dominance—and other aggressive behaviors in adulthood.<sup>[30], [31]</sup> In a review of this literature, Power found that young males of species with intense physical male-male competition in adulthood nearly always engage in more play

fighting than do young females.<sup>[30]</sup> This pattern is found across species of marsupials (e.g., red kangaroos, *Macropus rufus*), pinnipeds (e.g., northern elephant seal; *M. angustirostris*), ungulates (e.g., sheep; *S. ibex*), rodents (Norway rat, *Rattus norvegicus*) and primates (e.g., chimpanzee, *Pan troglodytes*), and is not found in their monogamous cousins with less intense same-sex competition.<sup>[31], [32], [33]</sup>

As far as I know, there are no gender role beliefs in any of these species and yet their young engage in sex-typical behaviors that presage reproductive activities in adulthood. Early engagement in these behaviors helps the young to prepare for the sex-specific rigors of adulthood, including more agentic activities for males and more communal ones for females.

As with these myriad species, children create their own worlds based in part on the sex-typed demands faced by our ancestors. These demands included a higher frequency of agentic activities of our male ancestors—including male-on-male violence to achieve social influence and resource control—and a higher frequency of communal activities of our female ancestors.<sup>[34]</sup> As in other species, the influence of prenatal and early postnatal exposure to sex hormones results in biases in children's agentic (e.g., play fighting) and communal (e.g., play parenting) play and the associated behaviors and skills are refined as children develop in same-sex communities with their peers.

As any parent knows, these sex differences are not the consequence of a parental imposition of stereotyped expectations on children. Nor can these differences be immutably altered by the edicts of gender role theorists or policy scolds working in central governments.

## References

- [1] Hyde, J. S. (2005). The gender similarities hypothesis. *American Psychologist*, 60, 581-592. [2] Wood, W., & Eagly, A.H. (2002). A cross-cultural analysis of the behavior of women and men: Implications for the origins of sex differences. *Psychological Bulletin*, 128, 699-727. [3] Mackay, C. (1841). *Extraordinary popular delusions and the madness of the crowds*. London: Richard Bentley. [4] Halpern, D. F., Straight, C. A., & Stephenson, C. L. (2011). Beliefs about cognitive gender differences: Accurate for direction, underestimated for size. *Sex Roles*, 64, 336-347. [5] Jussim, L. (2017). Précis of Social Perception and Social Reality: Why accuracy dominates bias and self-fulfilling prophecy. *Behavioral and Brain Sciences*, 40, e1. [6] Löckenhoff, C. E., Chan, W., McCrae, R. R., De Fruyt, F., Jussim, L., De Bolle, M., ... & Nakazato, K. (2014). Gender stereotypes of personality: Universal and accurate? *Journal of Cross-Cultural Psychology*, 45, 675-694. [7] Eagly, A. H. (1987). *Sex differences in social behavior: A social-role interpretation*. Hillsdale, NJ: Erlbaum. [8] Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Review*, 109, 573-598. [9] Best, D. L., & Williams, J. E. (1983). A cross-cultural viewpoint. In A. E. Beall & R. J. Sternberg (Eds.), *The psychology of gender* (pp. 215-248). New York: Guilford Press. [10] Andersson, M. (1994). *Sexual selection*. Princeton, NJ: Princeton University Press. [11] Darwin, C. (1871). *The descent of man, and selection in relation to sex*. London: John Murray. [12] Christov-Moore, L., Simpson, E. A., Coudé, G., Grigaityte, K., Iacoboni, M., & Ferrari, P. F. (2014). Empathy: Gender effects in brain and behavior. *Neuroscience & Biobehavioral Reviews*, 46, 604-627. [13] Clutton-Brock, T. H. (1991). *The evolution of parental care*. Princeton, NJ: Princeton University Press. [14] American Psychological Association (2018). *Guidelines for psychological practice with boys and men*. Washington, D.C.: Author. [15] Hall, G. C. H., & Barongan, C. (1997).

Prevention of sexual aggression: Sociocultural risk and protective factors. *American Psychologist*, 52, 5-14. [16] [https://www.european-agency.org/sites/default/files/Gen\\_Education\\_in\\_Norway.pdf](https://www.european-agency.org/sites/default/files/Gen_Education_in_Norway.pdf); <https://www.government.se/4adb29/contentassets/efcc5a15ef154522a872d8e46ad69148/gender-equality-policy-in-sweden> [17] Meland, A. T., & Kaltvedt, E. H. (2019). Tracking gender in kindergarten. *Early Child Development and Care*, 189, 94-103. [18] Maccoby, E. E. (1990). Gender and relationships: A developmental account. *American Psychologist*, 45, 513-520. [19] Maccoby, E. E. (1998). *The two sexes: Growing up apart, coming together*. Cambridge, MA: Belknap Press. [20] Whiting, B. B., & Edwards, C. P. (1988). *Children of different worlds: The formation of social behavior*. Cambridge, MA: Harvard University Press. [21] Golombok, S., & Rust, J. (1993). The Pre-School Activities Inventory: A standardized assessment of gender role in children. *Psychological Assessment*, 5, 131-136. [22] Golombok, S., Rust, J., Zervoulis, K., Croudace, T., Golding, J., & Hines, M. (2008). Developmental trajectories of sex-typed behavior in boys and girls: A longitudinal general population study of children aged 2.5–8 years. *Child development*, 79, 1583-1593. [23] Todd, B. K., Fischer, R. A., Di Costa, S., Roestorf, A., Harbour, K., Hardiman, P., & Barry, J. A. (2018). Sex differences in children's toy preferences: A systematic review, meta-regression, and meta-analysis. *Infant and Child Development*, 27, e2064. [24] Dinella, L. M., & Weisgram, E. S. (2018). Gender-typing of children's toys: Causes, consequences, and correlates. *Sex Roles*, 79, 253-259. [25] Degner, J., & Dalege, J. (2013). The apple does not fall far from the tree, or does it? A meta-analysis of parent–child similarity in intergroup attitudes. *Psychological Bulletin*, 139, 1270-1304. [26] Tenenbaum, H. R., & Leaper, C. (2002). Are parents' gender schemas related to their children's gender-related cognitions? A meta-analysis. *Developmental Psychology*, 38, 615-630. [27] Turner, P. J., & Gervai, J. (1995). A multidimensional study of gender typing in preschool children and their parents: Personality, attitudes, preferences, behavior, and cultural differences. *Developmental Psychology*, 31, 759-772. [28] Weisner, T. S. & Wilson-Mitchell, J. E. (1990). Nonconventional family lifestyles and sex typing in six-year-olds. *Child Development*, 61, 1915-1933. [29] Reiner, W. G., & Gearhart, J. P. (2004). Discordant sexual identity in some genetic males with cloacal exstrophy assigned to female sex at birth. *New England Journal of Medicine*, 350, 333-341. [30] Power, T. G. (2000). Play and exploration in children and animals. Mahwah, NJ: Erlbaum. [31] Smith, P. K. (1982). Does play matter? Functional and evolutionary aspects of animal and human play. *Behavioral and Brain Sciences*, 5, 139-184. [32] Aldis, O. (1975). *Play fighting*. New York: Academic Press. [33] Chau, M. J., Stone, A. I., Mendoza, S. P., & Bales, K. L. (2008). Is play behavior sexually dimorphic in monogamous species? *Ethology*, 114, 989-998. [34] Geary, D. C. (2021). *Male, female: The evolution of human sex differences* (third ed.). Washington, D.C.: American Psychological Association.

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