

The fragile male

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The human male is, on most measures, more vulnerable than the female. Part of the explanation is the biological fragility of the male fetus, which is little understood and not widely known. A typical attitude to boys is that they are, or must be made, more resilient than girls. This adds "social insult to biological injury." Culture and class make a difference to the health and survival of boys. The data presented here have implications for the clinical management of male patients as well as for the upbringing of boys.

Summary points

The disadvantages of the male are usually seen as socially mediated

Even from conception, before social effects come into play, males are more vulnerable than females

Social attitudes about the resilience of boys compound the biological deficit

Male mortality is greater than female mortality throughout life

The causes are a mixture of biological and social pressures: we need to be aware of both in order to promote better development and health for boys and men

Downhill from conception to birth

At conception there are more male than female embryos. This may be because the spermatozoa carrying the Y chromosome swim faster than those carrying X. The male's pole position is, however, immediately challenged. External maternal stress around the time of conception is associated with a reduction in the male to female sex ratio, suggesting that the male embryo is more vulnerable than the female.¹ From this point on it is downhill all the way. The male fetus is at greater risk of death or damage from almost all the obstetric catastrophes that can happen before birth.² Perinatal brain damage,³ cerebral palsy,⁴ congenital deformities of the genitalia and limbs, premature birth, and stillbirth are commoner in boys,⁵ and by the time a boy is born he is on average developmentally some weeks behind his sister: "A newborn girl is the physiological equivalent of a 4 to 6 week old boy."⁶ The male brain is heavier, with a larger hypothalamus, probably from the influence of a surge of testosterone in the third trimester of pregnancy, which also promotes greater muscle bulk.⁷ Similar differences have been observed in chimpanzees.⁸ At term the excess has fallen from around 120 male conceptions to 105 boys per 100 girls.⁹

Male excess of developmental and behavioural disorders

By the time a boy is born the pattern seems set. Developmental disorders such as specific reading delay,¹⁰ hyperactivity,¹¹ autism and related disorders, clumsiness, stammering, and Tourette's syndrome¹² occur three to four times more often in boys than in girls, although girls, when they have such a disorder, may be more severely affected.¹³ Conduct and oppositional disorders are at least twice as common in boys.¹⁴ Genetic factors are known to play a part, varying from low heritability in conduct disorder to high in autism,¹⁵ but why are they all commoner in boys? None of these conditions is sex linked in the classical sense. But Skuse et al propose that the X chromosome does carry some of the burden of the social and cognitive deficits that are common to many (but not all) of these disorders.¹⁶ They found that, of people with Turner's syndrome (XO), those with an X chromosome from their mothers (who would be boys if they also had a Y chromosome) had significantly more hyperactivity, attention deficits, and poorer social and emotional expressivity than those with X chromosomes from their fathers. These results are supported by the twin study of Scourfield et al, which shows a significant genetic influence on social cognition to the disadvantage of males.¹⁷ "Males are attempting something extra all through life."¹⁸

Social and cultural attitudes: danger and despair

Since the sex of most fetuses is unknown to the parents until birth, social attitudes and prejudices about the sex of the baby cannot make any difference, but as soon as the child is born these can amplify pre-existing biological disadvantage or indeed, in traditional patriarchal societies where males are strongly favoured, reduce it. In rural Bangladesh, for example, more girls than boys die during infancy and early childhood.¹⁹ Cultural expectations about masculinity shape the experience of boys as they grow up. Most at risk are the "boys who don't talk."²⁰ They become "ashamed of being ashamed,"²¹ and try to stop feeling anything. This makes them seem invulnerable, even to themselves. This is not a safe strategy. The excess of non-fatal and fatal accidents among boys seems to be part of a pattern of poor motor and cognitive regulation in the developing male, leading to misjudgment of risk. In adolescence the nature of risk taking may change and lead to dangerous experiments with drugs and alcohol or to violence against self and others. As is now well known, the suicide rate in young men is several times higher than in young women and has risen alarmingly from the late 1970s until recently in Britain and several other Western nations.²² The dramatic rise in this statistic which parallels a soaring rate in violent crime, also largely due to males²³ implicates powerful environmental rather than biological factors. For example, the male to female ratio of suicides in the 15-24 age group varies from 7.1:1 in Ireland to 1.1:1 in Mauritius.²⁴ There is similar variation in deaths from all causes within countries. In England and Wales the death rate in boys under 16 is 41% greater than in girls. Differences between social classes are even greater: the death rate for boys in social class V is more than twice that in social class I.²⁵

Males are better at throwing and map reading, but more out of touch

Coeducation has exposed another difference that was less evident (even though paradoxically more pronounced²⁶) in the past: that girls are better than boys at most academic subjects. Results of the GCSE (General Certificate of Secondary Education) examination, taken at age 16 in England, have only relatively recently been collected on a nationwide scale, but they show a considerable gap between the sexes in scholastic achievement: 42.8% boys compared with 53.4% girls get grade C or above at GCSE,²⁷ and in lower social classes the gap is even greater.²⁸ Boys mature more slowly than girls and later tend to catch up with girls

academically. Disruptive ("boyish") behaviour may be less tolerated in modern schools than it was in the past.²⁹ Males, meanwhile, tend to have superior skills in mathematics and other non-verbal tasks. Even at the age of 2 boys do better than girls at building a bridge with toy bricks.³⁰ In general, males are better at spatial and navigational skills, such as throwing, map reading,³¹ chess, and architecture, though these are not invariable advantages. Spatial ability, for example, is better in female than male Inuit.³² Yet males everywhere have consistently maintained a superior ability to match figures rotated at different angles.³³ Girls have better literary skills and are more aware of and explicit about their feelings, while boys tend to clam up, especially when their emotions are high, and just feel uncomfortable and awkward without knowing why. The much studied defect "alexithymia" lack of an emotional vocabulary is much commoner in boys.³⁴ Alexithymia is associated with deficits in interhemispheric transfer across the brain,³⁵ a feature also noted in Hopkins and Bard's study of infant chimpanzees.⁸

Even though almost all the most powerful positions in politics and business are still occupied by relatively few men, recent social changes in post-industrial societies do not favour the majority, but in the rest of the world men retain social advantages two thirds of the 960 million illiterate adults in the world are female.³⁶ Disorders of addiction, particularly substance abuse, are commoner in males. Even when ill, men may not notice signs of illness,³⁷ and when they do they are less likely to seek help from doctors.³⁸ This tendency will account for some of the excess suicides in males. In his despair the victim believes that no help is available, that talking is useless. If baby boys are typically harder to care for (see below) it is arguable that they will be more likely to feel lonely as adults.

Lethal diseases

Later in life the process continues unabated. Circulatory disorders, diabetes, alcoholism, duodenal ulcer, and lung cancer are all commoner in men,³⁹ while women have significantly higher rates of depressive, eating, and connective tissue disorders. Male suicide rates continue to exceed those in females throughout life, and, as is universally known, women survive men by several years in almost all countries, and the gap is widening. Androgens could be implicated in the earlier death of males, but recent studies suggest that female mosaicism may enhance lifespan.⁴⁰

There is unlikely to be a single explanation for all the foregoing differences, but it is worth exploring the period in life where there may be interaction between inborn and environmental qualities.

Infant boys are more sensitive

If newborn boys are less mature than girls then they probably require more attention. Trevarthen observed that parents tend to mimic newborn boys more than they do girls, suggesting that as caregivers they have to work harder with boys.⁴¹ Tronick and Weinberg state that "infant boys are more emotionally reactive than girls. They display more positive as well as negative affect, focus more on the mother, and display more . . . distress and demands for contact than do girls. Girls show more interest in objects, a greater constancy of interest, and better self regulation of emotional states."^{42 43} At six months Malatesta and Haviland found a "very significant sex difference for the expression of interest, with female infants displaying interest expressions more frequently than males . . . female infants have more open eyes and higher brow placements than male infants [which] may serve to lead observers to quite different overall impressions about male and female sociability." Boys tended to be too excitable, and mothers did all they could to soothe and settle them, at some cost to their development.⁴⁴ One of the findings of Murray and her colleagues is that boys are more affected by maternal postnatal depression than girls, the effect extending into nursery school

years, long after the depression has lifted.^{45 46} One of the most notable effects is inattentiveness and hyperactivity, especially in boys from families of lower social class. In Fivush's study of communication styles of mothers with their 3 year old children, the mothers did not judge any of their daughters to be angry, only their sons.⁴⁷ Significant differences in the perception of emotional states are already established by this age. When exposed to the distress of others, young boys are less sympathetic than girls. A group of 6 year old girls and boys were listening to the recorded sound of a crying baby. Many more girls than boys spoke kindly to what they assumed was a real infant, while more than twice as many boys simply turned the speaker off. Tracings of heart rate variability suggested that the boys were more anxious; they could not tolerate the infant's distress.⁴⁸

Nor can they tolerate their own. In a recent study of the effects of early bereavements and separations, although the numbers were about equal in both sexes, boys dismissed the experiences as of little concern more often than girls, while girls were more often unduly preoccupied by them.⁴⁹ Neither of these are healthy responses, but the boys' denial of loss or sorrow is consistent with the male habit of not knowing how he feels and not asking for help when it is needed. In one sample of British GPs male doctors showed more anxiety and depression than female doctors (and more than the average male population) and were more likely to avoid contact with other people when stressed.⁵⁰

The care of boys is generally more difficult and therefore more likely to go wrong, adding to the deficits already existing before birth. Since most of the growth of the human brain takes place after birth, some early environmental stressors could lead to disadvantage for boys being "wired in."⁵¹ In any case, in boys the formation of secure attachment to a caregiver is more subject than in girls to parental unavailability, insensitivity, or depression. Consistent with this is the observation that male rhesus monkeys partially or totally isolated from maternal care are more likely to "freeze" in test situations than are matched females, who are more active and curious.⁵²

Conclusion

Before concluding that maleness is a genetic disorder it is important to note that the foregoing data are embedded in social values about normality. A hominid male of, say, half a million years ago may have needed all the opportunities for risk taking he could get, just to procreate. Charles Darwin noted this.⁵³ Many male mammals fail in their primary biological goal, which is to reproduce. They risk instead being excluded, wounded, or killed by rivals. Rivalries in human societies are more complex: perhaps competition for females has been replaced by competition with them.⁵⁴ The survival skills required by our ancestors, such as how to calculate physical risk, are not very similar to those needed today, even if we still have most of the same genes. Male advantages in physical strength and spatial skills were probably more useful in the past. In contrast, while the pre-eminence of the few men who reach the very top of public life is barely dented by women, the modern male is now more often seen as lacking qualities associated with females, such as self regulation of emotions and reflectiveness.

It is clear that the male is more vulnerable from the beginning of life. Where caregivers assume that from birth a boy ought always to be tougher than a girl, his inborn disadvantage will be amplified. (Where males are more highly valued, as the Bangladesh study shows,¹⁹ they get relatively better care, probably because girls are neglected.) The data presented here have implications for the upbringing of boys. The more developmental problems there are, the more sensitive care is required. Yet difficult babies often receive less good care, precisely because they are more difficult to look after. Biological and social constraints work together against the interests of the male. If parents were more aware of male sensitivity, they might

change the way they treat their sons. Doctors, too, need to be aware that male patients may withhold their health concerns for fear of appearing needy or may ignore them altogether. Most discussions (with a few honourable exceptions^{55 56}) tend to ignore one side or the other of the story. Plenty has been written about sexual characteristics from a social and philosophical perspective, and about sexual differences from a Darwinian and biological point of view, but there is little evidence of common ground between them and apparently little curiosity as to why boys are vulnerable to so many stressors that may confront them. The implicit assumption of the majority of scientific writers (most of whom until this generation were themselves men) has probably been that "boys will be boys." Perhaps they will, but the matter needs exploring in a more coherent way.

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