Answer of Question 3
(NTU interview)

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Abstract

Abstract From the explanation given by the Cambridge Dictionary, robustness is the quality of being strong, healthy or unlikely to break or fail. And also, fragility means the quality of being easily damaged or broken. Biological robustness and fragility are more likely to be a property of the biological system. When we apply a change to a system, the properties of that system may or may not change in some way. Suppose the system has insufficient resistance to the applied change. In that case, i.e., it is not easy to restore its homeostasis. The system is considered weak in robustness, i.e., very fragile. As Alderson and Doyle (2010) stated, "a property of a system is robust if it is invariant concerning a set of perturbations." As opposed to that, biological fragility presents the variant property for a system under a disturbed environment.

1. Healthcare Delivery Models

The total patient-care model (case nursing) implies that RNs provide care for one patient or more during a shift. The nurse works in tandem with other parties connected to healthcare services: patients, families, and team members. The continuity of care within the shift and patient-nurse interaction are the main advantages of this system. Functional nursing implies that nursing activities are assigned to functional units and that nurses perform specific tasks across a variety of patient types.

Despite the division of labor, this model does not enable autonomy or encourage professional development (Fernandez, Johnson, Tran, Miranda, 2012). Moreover, in this case, it's only the charge nurse who bears the high responsibility of coordinating care. Collaboration with Healthcare Provider Team nursing implies that the RN applies leadership and supervision to coordinate a small group of ancillary personnel to care for a small group of patients. Tasks are delegated and performed by the skills and scope of practice of each team member. A patient care, in this case, is less fragmented; however, one of the main complications is communication within the team. Primary nursing is patient-centered and assumes 24-hour responsibility and accountability by the RN in terms of planning, directing, and assessing a patient's care, from admission to discharge.

The following model allows for an ongoing holistic approach to healthcare and encourages the nurse's autonomy (Fernandez et al., 2012). Still, a high level of performance and responsibility is expected from these nurses. Another model is case management, where RNs plan and supervise the processes involved in providing care to patients with complex healthcare problems.

Although most institutions utilize several delivery models toward higher flexibility of activities, there might be situations when nurses need to cooperate with other healthcare providers. The need

for consultation and collaboration with different personnel arises when a situation goes beyond the RN's level of expertise, or if there are no available resources to perform necessary healthcare tasks (Bridges, Davidson, Odegard, Maki, Tomkowiak, 2011).

Frequently, cooperation is needed to ensure correct diagnoses and to define a further course of action. Moreover, patients who consider a course of treatment to be inaccurate tend to request a second opinion to learn about alternative solutions for care. In any type of situation, patients and their interests remain paramount. Through consultation and collaboration, nurses can decrease medical mistakes and emphasize proper healthcare delivery.

2. 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.

3. Male excess of developmental and behavioural disorders

By the time a boy is born the pattern seems set. Developmental disorderssuch 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."

4. 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: 42.8with 53.4greater.28 Boys mature more slowly than girls and later tend to catch up with girls

3 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.

5. 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

5 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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