INSIDE THE FEMALE BRAIN

Neurological studies show how comparisons between the female and male brain can play out in the workplace.

by DR JOHN CUMMINS

Women are generally good at avoiding conflict and reading body language and emotional cues, skills that were honed way back in prehistoric times when their smaller stature and the need to protect infants made them more vulnerable. In contemporary primate studies, females with stronger social connections have a higher rate of their infants' survival. For males, survival depends upon physical aggression and competition leading to reproduction.

These methods of survival shaped the female brain and its response to stress. Structurally, the female brain has three areas that are larger than the male brain: the pre-frontal cortex (the control centre for emotions); the insular (the intuition centre); and the hippocampus (which stores memories with strong emotion such as arguments and romantic encounters). The amygdala, which is responsible for physical aggression, is smaller in females.

These differences start to develop just after conception. At eight weeks, testosterone in male foetal brains encourages growth in the sexual and aggression centres and reduces nerve fibres in the communication, emotion and observation centres. In females, oestrogen stimulates nerve fibre growth in the communication, emotion and observation centres, including areas responsible for intuition, caring and empathy. This causes several structural brain differences that persist through life. Women have 11 per cent more neurons for language and hearing than men, and girls speak up to three times more words per day than boys, and speak more rapidly.

From birth, girls show more interest in the emotional expressions of those around them and are better at reading faces and hearing human vocal tones. Even at 24 hours after birth, female infants are more responsive to the distressed cries of another baby. As puberty develops, hormones hijack the brain. After puberty, women are twice as likely to suffer from stress, anxiety and depression. (Recently, functional brain imaging studies in adolescent girls with adverse emotional symptoms, but not yet manifesting clinical anxiety/depression, were carried out by Professor Gin Malhi at Sydney Medical School. They demonstrated structural changes in the brain between the frontal lobe and other areas including the amygdala and hippocampus.)

In the first half of the menstrual cycle oestrogen production peaks, resulting in a calmer emotional state and a desire for socialisation, including talking and intimacy that activate pleasure hormones dopamine and oxytocin. Both those hormones peak when oestrogen production is at its highest. Socialisation is further enhanced by a 25 per cent increase in nerve fibre growth during this period, which makes the brain sharper and heightens verbal performance ability. The oestrogen is suddenly reversed in the second half of the menses with a tendency towards social withdrawal, irritability and less verbal fluency. The rapid change in brain functioning can be extremely emotionally disruptive for some.

Post menopause, the hormonal surges abate as the oestrogen is withdrawn. There is less drive to avoid conflict, maintain (unhealthy) relationships at all costs, and/or to care entirely for the needs of others. Interestingly, women are much more likely to initiate a divorce after 50 years of age than a male.

Studies show that women's brains have a heightened response in their amygdala in anticipation of pain or fear. Their brains appear to be more sensitised to perceived threats – a protective mechanism in prehistoric times due to their vulnerability. Higher oestrogen/progesterone lead to higher serotonin production and resistance to stress. Some genes have been identified that predispose women to stress as well.

Generally women are evolutionarily wired for reducing conflict, fostering strong social relationships and caring for others, but they will be increasingly threatened and stressed if their relationships at work are under threat, if conflict is persistent or if they feel ostracised. This may result in aggression, which is often verbal, subtle and relationship based. Conversely, men biologically lack the sophistication of the verbal fluency, the ability to read subtle emotional cues, and the emotional memory that women have; they thrive on competition and are more likely to respond with aggression. Due to their biological makeup, women in general thrive in workplace positions and projects that fuel their ability to socialise and connect. Men however are more likely to succeed in individual projects or in a competitive environment, which activates their aggression, motivating a drive to succeed. **HRm**

Dr John Cummins, medical director at Executive Medicine in Sydney, is a specialist consultant physician.