

Letter from the Desk of David Challinor  
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When men and women live together, they realize that each leads quite a different emotional life. The magnitude of the difference and its cause have eluded researchers, largely because there has been no method of measuring scientifically how each sex emotes. The emotional dissimilarity between men and women has been attributed to societal causes, a finding based on studies that consisted of elaborate questionnaires and analyses of intersexual conversations. The results of such work usually confirmed the stereotypical behavior long assigned to each sex.

Recently, however, new brain imaging techniques such as positron emission tomography (PET) and magnetic resonance imaging (MRI) enable scientists to spot changes in the behavior of our neurons. When neurons are active in our brains, they give off an electric charge that can be “seen” by these new instruments. Careful observation of this neural activity during induced emotions is leading to an understanding of what parts of the brain in men and women are at work. It appears that the brain in each sex functions with subtle differences and accumulating evidence indicates that there is considerable variation in the biology of emotions. It is not yet clear, however, what these differences mean and when they first appear in human growth.

To illustrate the difficulty in isolating gender variation, one series of tests on emotional responses showed the response difference within one sex to be equal or greater than between the two. Thus, attributing emotional differences by gender is more complicated than the old belief that men’s emotional reactions are primarily under the influence of the brain’s left hemisphere (the locus of the rational aspect of our thought processes), whereas women were primarily reacting to the neural processes of the right hemisphere (thought to be the seat of our emotional responses).

Although it had been considered “politically incorrect” to assume that women’s brains were different from men’s, this belief has changed thanks to new research techniques. It is, therefore, now acceptable for scientists to study gender differences in brain activity. In a recent test designed to gain insight into what is happening in the brains of people who are clinically depressed, healthy males and females were asked to concentrate on happy events such as weddings or the birth of a child. Brain scans in both sexes showed activity in those parts of the cortex used in planning ahead. This result confirmed earlier findings that happiness, regardless of gender, is directly connected to avoiding anxiety-producing thoughts. When asked to concentrate on a sad event, bursts of brain activity resulted; in women it was many times greater than it was in men. This research might help us to understand why clinical depression is almost twice as prevalent in women as in men. One supposition is that in some females the strong reaction to sad events causes such great neural activity that the circuits regulating emotional reaction “burn out.” This explanation seems rather far-fetched to me and clearly additional testing is needed.

Further research indicated differences in the way the brains of men and women react to anger. Faced with an anger-producing situation or person, women's brains produced a burst of activity not seen in men's, and it occurred in a small part of the brain called the septum. This segment is located in the brain's early-evolved limbic system, which has long been thought to be closely connected to our emotions. Dr. Tim Kimbrell, head researcher on this topic at the National Institute of Mental Health, speculated that this gender difference resulted from the kinds of memories that made women angry. Women have a tendency to become angry when thinking about people, while men tend to become angry about situations.

On a personal level, as a child I was aware that my sister and her girlfriends would occasionally have fights or strong disagreements which were more verbal than the physical encounters I had with my peers. Furthermore, these "fights" or ill feelings among the girls often continued for days, whereas the boys' hostile encounters were short, violent bursts of activity—usually wrestling on the lawn—which ended quickly by distractions such as an unexpected opportunity to go swimming. My memories and those of most adults are clouded; only isolated incidents survive and impressions overwhelm accuracy.

Although brain scans appear to show that men's anger produces a different pattern of neural activity from that of women's, scientists cannot tell whether men and women feel differently when angry. Meanwhile, progress is being made in understanding sexual variance as a result of some of the experiments I have described. In clinically depressed patients, only about 60-70% respond well to drug treatment, but there has been no way to determine in advance which patients will respond favorably. Kimbrell and his colleagues discovered that drugs helped those patients whose brain scans showed other kinds of neural activity connected with depression. Thus research on clinical depression can lead to different treatments for both male and female patients who suffer from this terrible affliction.

Would it be worthwhile to know that healthy men and women actually do have different emotional regimes? Many researchers agree that by gaining a clearer understanding of the emotional responses of the opposite sex, people should be able to cohabit more successfully and with less stress. In one fascinating study, Dr. Ruben Gur tested the oft-repeated dictum that women are better at reading emotions on faces than men. According to his results they are. A group of men and women were shown the same slides of people's faces. Both sexes had no trouble in identifying happy male and female faces and sad male images, but the men could only spot 70% of sad females whereas the women detected 90%. Interestingly, Dr. Gur found that men's limbic system (primitive emotional circuits of the brain) showed considerably more activity during this exercise than the women's. The men had to work harder for the same result. This finding may not sit well with some feminists because it indicates that men are not programmed to "see" the relevant clues to spot a sad woman's face. Feminists may validly argue, however, that if men can acquire certain other insights and behaviors from childhood training, they could also learn the importance of reading women's emotions in their faces.

Men and women were tested and asked to let their minds relax and go “blank,” as far as possible. However, in a “blank” state the part of men’s brains that showed the most activity was that concerned with the “fight or flight” response to threat. In women, on the other hand, the neural activity was concentrated in that part of the brain’s limbic system (cingulate gyrus) that controls complicated displays of emotions such as scowls and angry looks.

There is also some evidence that men and women learn languages differently and there will undoubtedly be continuing research to uncover other variations between the sexes. Men and women differ physically so there is no reason why they should not differ emotionally as well. Sex differences in brain activity are still hard to detect, but happy, outgoing males and females seem to show consistent brain activity in the brain’s left lobe while sadness, fear and other negative emotions are connected to the right lobe. At least the locus of these two contrasting feelings has been isolated and with time we may have a better insight into how the brain works. What is evident is that gender differences in neural activity are subtle and complex. Men and women are more truly alike (identical for about the first fortnight *in utero*) than different. We share hormones and blood types and can even exchange organs in some cases. Rather than tout “Vivé la difference!” let us rejoice in all the shared characteristics of men and women.

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Note: The source of much information for this letter came from Kate Douglas’ article in New Scientist, 27 April 1996.