

MEN AND WOMEN RESPOND DIFFERENTLY TO PAIN. RECENT RESEARCH INDICATES THAT THE WAY THE NERVOUS SYSTEMS OF MEN AND WOMEN PROCESS AND REACT TO PAIN APPEARS TO BE THE KEY. SCIENTISTS HOPE THAT A BETTER UNDERSTANDING OF BOTH THE BIOLOGICAL AND PSYCHOSOCIAL FACTORS INFLUENCING THESE DISSIMILARITIES IN MEN AND WOMEN WILL LEAD TO MORE EFFECTIVE AND TARGETED TREATMENTS FOR PAIN.

GENDER AND PAIN

From arthritis to surgical recovery, women report experiencing pain more often and with greater intensity than men suffering similar ailments. Does this mean that men and women are genetically different when it comes to the perception of pain?

Of the 50 million Americans afflicted with chronic pain, women are at greater risk than men for developing several acute disorders. Severe pain, such as a backache or migraine, often prevents its victims from working, exercising, and enjoying sports. Some lose their appetite. With an estimated annual cost of \$100 billion in healthcare, compensation, and legal fees, pain is considered the most costly health problem in the United States.

Researchers have confirmed that gender influences not just the perception of pain, but also how much we talk about it, how we cope with it, the medications we use, and even the dosage doctors prescribe. To assist with proper rehabilitation, scientists are investigating the various circumstances under which men and women differ when dealing with pain.

However, progress in this area is hampered by a lack of adequate guidelines for conducting such studies. To navigate this

sensitive area, a group of leading researchers in this field have begun to formulate a set of procedures. These improvements may lead to:

- The prospect of gender-specific medications for pain treatment.
- A better understanding of the prevalence of certain pain conditions among women.

A striking discovery is that the painkiller morphine works differently in the brains and spinal cords of males and females. Animal experiments have revealed that females require twice the dosage as males to experience the same

amount of pain relief.

Morphine binds to mu opioid receptors — cell membrane proteins that influence the behavior of cells—in order to decrease pain. Previously, studies of opioid receptors had focused exclusively on males. Although this protein is located in the same brain region, males seem to have higher levels of the receptor than females, and it is expressed differently. Researchers suspect that this distinction may account for sex differences in pain relief.

Studies of why women are more sensitive than men to ex-

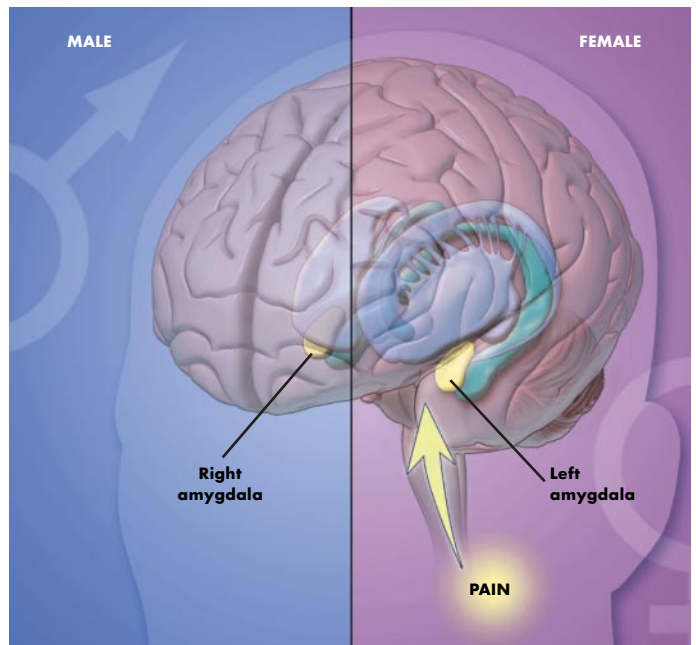


ILLUSTRATION BY ETHAN TYLER

▲ IN EXPERIENCING PAIN, THE RIGHT AMYGDALA IS ACTIVATED MORE IN MEN, AND IT HAS MORE CONNECTIONS TO REGIONS OF THE BRAIN INVOLVED WITH EXTERNAL ENVIRONMENT. IN WOMEN, THE EXPERIENCE OF PAIN ACTIVATES THE LEFT AMYGDALA MORE, WHICH HAS MORE CONNECTIONS TO REGIONS OF THE BRAIN ASSOCIATED WITH INTERNAL FUNCTIONS.

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perimentally induced pain may help explain the prevalence of various pain conditions among women. Following exposure of 25 men and 25 women to a harmful agent on their fingers, the subjects rated their response by intensity and unpleasantness. After 16 rounds, researchers found that women reported higher pain levels during and after the agent was administered as compared to men. This suggests that females' central processing of pain showed greater activity.

Biological factors, including inherited conditions and hormone levels during menstruation, affect women's sensitivity to pain. Researchers speculate that the prevalence of certain disorders among females may be sex-linked because studies showed strong pain correlations for migraine headaches and menstrual and back pain among human identical and

fraternal twins.

Apart from the biological systems at work, psychosocial mechanisms stemming from genetic, hormonal, and societal influences also play a part, researchers say. Psychologists cite stereotypical gender roles where women are encouraged and men discouraged from expressing the level of pain they experience. A recent study evaluating gender-specific expectations of pain found that both sexes felt men were more unwilling than women to report pain, and that women seek medical advice more often than men.

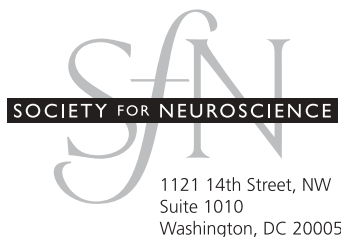
The latter difference may be an evolutionary survival advantage for women, rather than a perceived weakness, some researchers speculate. Because pain drives most people to seek treatment in the first place, women may reduce the chance of significant tissue damage if they get checked out early.

A recent study identified three psychosocial factors that may explain why women seem more sensitive to pain: women tend to be more sensitive to threats, they self-monitor more than men, and women typically experience more depression and anxiety. Some studies have associated depression and anxiety with more or more intense pain.

Other studies show that men prone to hostility report higher levels of experimental pain, and that negative emotions relate more strongly with severe chronic pain in men than in women.

Scientists need to learn more about brain circuitry and social stress and develop better animal models that more effectively mimic humans under painful conditions. Ultimately, their goal is to improve treatments for the millions of pain sufferers—both men and women.

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