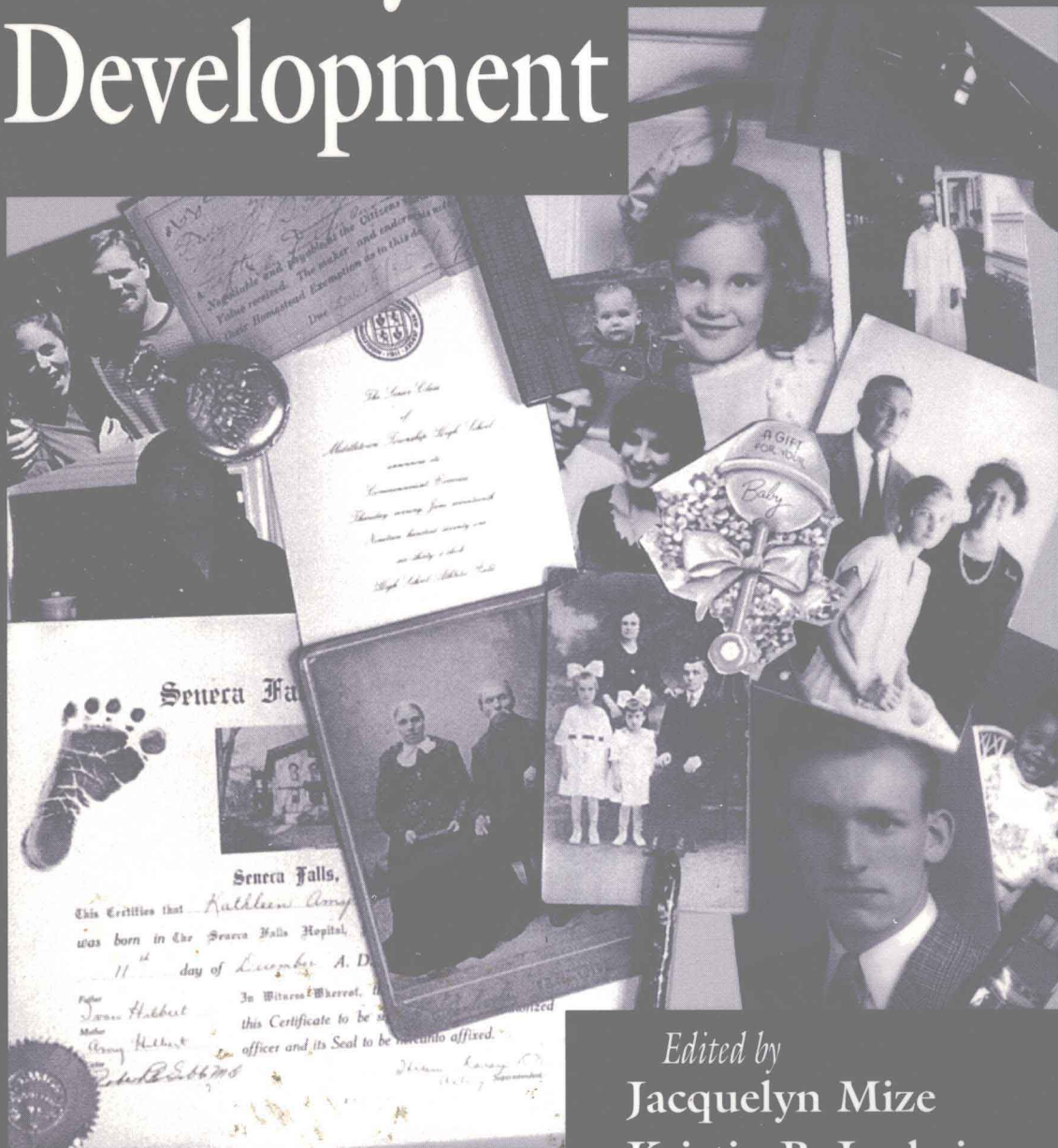


READINGS in Family and Human Development



Edited by
Jacquelyn Mize
Kristin B. Ludwig
Muriel R. Azria

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Auburn University

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Readings in Family and Human Development

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Introduction

In recent years the family has gotten a lot of press—both good and bad. One reason there has been so much focus on the family is that the family is considered by professionals and the lay public alike to be the most important influence on an individual's development. Without strong families, it is argued, American society will flounder. Thus, debates about the family and what is best for the American family have generated a good bit of heat in the political arena. It so happens that researchers have been interested in the well-being of the family and its individual members for decades. Since the turn of the century, researchers in the family and human development field have studied families and children's development within the family. This research has provided not only a great deal of basic information about the factors that contribute to healthy family functioning, but has been important in guiding the development of educational materials and programs for families.

The readings in this book cover just a sample of the issues of concern to family and human development professionals and to family members themselves. Many of the articles summarize family and human development research in a way that makes it digestible for the lay public. Other articles raise public policy issues related to family and human development. And other readings provide advice or guidance. Our hope is that these articles will be interesting to you, will stimulate critical thinking, and will help you make more informed decisions in the future.

We have selected readings from a range of sources. Most of the articles come from popular sources, such as *Newsweek* or *Psychology Today*. A few readings, however, have been gleaned from journals read by professionals in family and human development (e.g., *American Psychologist*, *Family Relations*). It is likely that you will find these articles more challenging than the ones from popular sources, but still they are fairly simple, and we think you will find them worth the extra effort.

We also provide a set of out-of-class (homework) activities designed to help you synthesize the material and relate to it in a more personal way. Your instructor(s) will make specific assignments for which tasks to do when. There are a couple of points we would like to make about these assignments. Many assignments ask you to interview one or more people regarding a topic about which you have read. For instance, one activity asks that you find a friend whose parents were divorced and ask that person a series of questions. The most important point to make here is that you should not provide any information in your homework or in class discussion that would give any clues as to the person's identity.

These homework activities also provide an opportunity to make a point about research in the family and human development field and personal experience. Often the activities ask you to evaluate whether your or your informant's experiences or opinions are/were consistent with information presented in your readings. Sometimes you may find that a person's views or experiences are not consistent with what you have read. This does not mean the research presented in your readings is invalid, nor does it mean that the person you interviewed is strange. The inconsistency is only a reflection of the fact that research typically presents what is true for *many* or *most* people, or for *the average* person. The same goes for your own experiences and the results of research. You may say to yourself about some research you read, "that's not true for me!" But if the research was well done, it is likely that the results are true for most people, at least under the conditions and at the time the research was conducted. For instance, one of the articles about discipline for young children points out that spanking can make children behave more aggressively. You may say to yourself, "My parents spanked me, and I'm not aggressive, so I don't believe spanking makes children more aggressive." Although your belief about yourself may be perfectly valid, the fact remains that children who are spanked are *on average* more aggressive than are their peers who are not spanked by parents. So, BOTH your own experience and results of research can be true, even if the two seem inconsistent.

—Jacquelyn Mize

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Chapter 1

Early Adulthood and Gender Roles

- **Sizing Up the Sexes**
- **Gender and Relationships:
A Developmental Account**
- **A Peace Plan for the
Gender Wars**

Sizing Up the Sexes

Christine Gorman

What are little boys made of?
What are little boys made of?
Frogs and snails
And puppy dogs' tails,
That's what little boys are made of.

What are little girls made of?
What are little girls made of?
Sugar and spice
And all that's nice,
That's what little girls are made of.

—Anonymous

Many scientists rely on elaborately complex and costly equipment to probe the mysteries confronting humankind. Not Melissa Hines. The UCLA behavioral scientist is hoping to solve one of life's oldest riddles with a toybox full of police cars, Lincoln Logs and Barbie dolls. For the past two years, Hines and her colleagues have tried to determine the origins of gender differences by capturing on videotape the squeals of delight, furrows of concentration and myriad decisions that children from 2 1/2 to 8 make while playing. Although both sexes play with all the toys available in Hines' laboratory, her work confirms what most parents (and more than a few aunts, uncles and nursery-school teachers) already know. As a group, the boys favor sports cars, fire trucks and Lincoln Logs, while the girls are drawn more often to dolls and kitchen toys.

But one batch of girls defies expectations and consistently prefers the boy toys. These youngsters have a rare genetic abnormality that caused them to produce elevated levels of testosterone, among other hormones, during their embryonic development. On average, they play with the same toys as the boys in the same ways and just as often. Could it be that the high levels of testosterone present in their bodies before birth have left a permanent imprint on their brains, affecting their later behavior? Or did their parents, knowing of their disorder, somehow subtly influence their choices? If the first explanation is true and biology determines the choice, Hines wonders, "Why would you evolve to want to play with a truck?"

Not so long ago, any career-minded researcher would have hesitated to ask such questions. During the feminist revolution of the 1970s, talk of inborn differences in the behavior of men and women was distinctly unfashionable, even taboo. Men dominated fields like architecture and engineering, it was argued, because of social, not hormonal, pressures. Women did the vast majority of society's child rearing because few other options were available to them. Once sexism was abolished, so the argument ran, the world would become a perfectly equitable, androgynous place, aside from a few anatomical details.

But biology has a funny way of confounding expectations. Rather than disappear, the evidence for innate sexual differences only began to mount. In medicine, researchers documented that heart disease strikes men at a younger age than it does women and that women have a more moderate physiological response to stress. Researchers found subtle neurological differences between the sexes both in the brain's structure and

in its functioning. In addition, another generation of parents discovered that, despite their best efforts to give baseballs to their daughters and sewing kits to their sons, girls still flocked to dollhouses while boys clambered into tree forts. Perhaps nature is more important than nurture after all.

Even professional skeptics have been converted. “When I was younger, I believed that 100% of sex differences were due to the environment,” says Jerre Levy, professor of psychology at the University of Chicago. Her own toddler toppled that utopian notion. “My daughter was 15 months old, and I had just dressed her in her teeny little nightie. Some guests arrived, and she came into the room knowing full well that she looked adorable. She came in with this saucy little walk, cocking her head, blinking her eyes, especially at the men. You never saw such flirtation in your life.” After 20 years spent studying the brain, Levy is convinced: “I’m sure there are biologically based differences in our behavior.”

Now that it is O.K. to admit the possibility, the search for sexual differences has expanded into nearly every branch of the life sciences. Anthropologists have debunked Margaret Mead’s work on the extreme variability of gender roles in New Guinea. Psychologists are untangling the complex interplay between hormones and aggression. But the most provocative, if as yet inconclusive, discoveries of all stem from the pioneering exploration of a tiny 3-lb. universe: the human brain. In fact, some researchers predict that the confirmation of innate differences in behavior could lead to an unprecedented understanding of the mind.

Some of the findings seem merely curious. For example, more men than women are lefthanded, reflecting the dominance of the brain’s right hemisphere. By contrast, more women listen equally with both ears while men favor the right one.

Other revelations are bound to provoke more controversy. Psychology tests, for instance, consistently support the notion that men and women perceive the world in subtly different ways. Males excel at rotating three-dimensional objects in their heads. Females prove better at reading emotions of people in photographs. A growing number of scientists believe the discrepancies reflect functional differences in the brains of men and women. If true, then some misunderstandings between the sexes may have more to do with crossed wiring than cross-purposes.

Emotions

Female Intuition: There May Be Something to It

Do women really possess an ability to read other people’s hidden motives and meanings? To some degree, they do. When shown pictures of actors portraying various feelings, women outscore men in identifying the correct emotion. They also surpass men in determining the emotional content of taped conversation in which the words have been garbled. This ability may result from society’s emphasis on raising girls to be sensitive. But some researchers speculate that it has arisen to give women greater skill in interpreting the cues of toddlers before they are able to speak.

Male Insensitivity: It’s a Cultural Relic

If men seem less adept at deciphering emotions, it is a “trained incompetence,” says Harvard psychologist Ronald Levant. Young boys are told to ignore pain and not to cry. Some anthropologists argue that this psychic wound is inflicted to separate boys from their mothers and prepare them for warfare. Many men, says Levant, can recognize their emotions only as a physical buzz or tightness in the throat—a situation that can be reversed, he insists, with training.

Most of the gender differences that have been uncovered so far are, statistically speaking, quite small. “Even the largest differences in cognitive function are not as large as the difference in male and female height,” Hines notes. “You still see a lot of overlap.” Otherwise, women could never read maps and men would always be lefthanded. That kind of flexibility within the sexes reveals just how complex a puzzle gender actually is, requiring pieces from biology, sociology and culture.

Ironically, researchers are not entirely sure how or even why humans produce two sexes in the first place. (Why not just one—or even three—as in some species?) What is clear is that the two sexes originate with two distinct chromosomes. Women bear a double dose of the large X chromosome, while men usually possess a single X and a short, stumpy Y chromosome. In 1990 British scientists reported they had identified a single gene on the Y chromosome that determines maleness. Like some kind of biomolecular Paul Revere, this master gene rouses a host of its compatriots to the complex task of turning a fetus into a boy. Without such a signal, all human embryos would develop into girls. “I have all the genes for being male except this one, and my husband has all the genes for being female,” marvels evolutionary psychologist Leda Cosmides, of the University of California at Santa Barbara. “The only difference is which genes got turned on.”

Yet even this snippet of DNA is not enough to ensure a masculine result. An elevated level of the hormone testosterone is also required during the pregnancy. Where does it come from? The fetus’ own undescended testes. In those rare cases in which the tiny body does not respond to the hormone, a genetically male fetus develops sex organs that look like a clitoris and vagina rather than a penis. Such people look and act female. The majority marry and adopt children.

**But biology has a
funny way of
confounding
expectations.**

The influence of the sex hormones extends into the nervous system. Both males and females produce androgens, such as testosterone, and estrogen—although in different amount. (Men and women who make no testosterone generally lack a libido.) Researchers suspect that an excess of testosterone before birth enables the right hemisphere to dominate the brain, resulting in lefthandness. Since testosterone levels are higher in boys than in girls, that would explain why more boys are southpaws.

Subtle sex-linked preferences have been detected as early as 52 hours after birth. In studies of 72 newborns, University of Chicago psychologist Martha McClintock and her students found that a toe-fanning reflex was stronger in the left foot for 60% of the males, while all the females favored their

right. However, apart from such reflexes in the hands, legs and feet, the team could find no other differences in the babies’ responses.

One obvious place to look for gender differences is in the hypothalamus, a lusty little organ perched over the brain stem that, when sufficiently provoked, consumes a person with rage, thirst, hunger or desire. In animals, a region at the front of the organ controls sexual function and is somewhat larger in males than in females. But its size need not remain constant. Studies of tropical fish by Stanford University neurobiologist Russell Fernald reveal that certain cells in this tiny region of the brain swell markedly in an individual male whenever he comes to dominate a school. Unfortunately for the piscine pasha, the cells will also shrink if he loses control of his harem to another male.

Many researchers suspect that, in humans too, sexual preferences are controlled by the hypothalamus. Based on a study of 41 autopsied brains, Simon LeVay of the Salk Institute for Biological Studies announced last summer that he had found a region in the hypothalamus that was on average twice as large in heterosexual men as in either women or homosexual men. LeVay’s findings support the idea that varying hormone levels before birth may immutably stamp the developing brain in one erotic direction or another.

These prenatal fluctuations may also steer boys toward more rambunctious behavior than girls. June Reinisch, director of the Kinsey Institute for Research in Sex, Gender and Reproduction at Indiana University, in a pioneering study of eight pairs of brothers and 17 pairs of sisters ages 6 to 18 uncovered a complex interplay between hormones and aggression. As a group, the young males gave more belligerent answers than did the females on a multiple-choice test in which they had to imagine their response to stressful

Perception

He Can Read a Map Blindfolded, But Can He Find His Socks?

It's a classic scene of marital discord on the road. Husband: "Do I turn right?" Wife, madly rotating the map: "I'm not sure where we are." Whether men read maps better is unclear, but they do excel at thinking in three dimensions. This may be due to ancient evolutionary pressures related to hunting, which requires orienting oneself while pursuing prey.

If Lost in a Forest, Women Will Notice the Trees

Such prehistoric pursuits may have conferred a comparable advantage on women. In experiments in mock offices, women proved 70% better than men at remembering the location of items found on a desktop—perhaps reflecting evolutionary pressure on generations of women who foraged for their food. Foragers must recall complex patterns formed of apparently unconnected items.

situations. But siblings who had been exposed in utero to synthetic antimiscarriage hormones that mimic testosterone were the most combative of all. The affected boys proved significantly more aggressive than their unaffected brothers, and the drug-exposed girls were much more contentious than their unexposed sisters. Reinisch could not determine, however, whether this childhood aggression would translate into greater ambition or competitiveness in the adult world.

While most of the gender differences uncovered so far seem to fall under the purview of the hypothalamus, researchers have begun noting discrepancies in other parts of the brain as well. For the past nine years, neuroscientists have debated whether the corpus callosum, a thick bundle of nerves that allows the right half of the brain to communicate with the left, is larger in women than in men. If it is, and if size corresponds to function, then the greater cross-talk between the hemispheres might explain enigmatic phenomena like female intuition, which is supposed to accord women greater ability to read emotional clues.

These conjectures about the corpus callosum have been hard to prove because the structure's girth varies dramatically with both age and health. Studies of autopsied material are of little use because brain tissue undergoes such dramatic changes in the hours after death. Neuroanatomist Laura Allen and neuroendocrinologist Roger Gorski of UCLA decided to try to circumvent some of these problems by obtaining brain scans from live, apparently healthy people. In their investigation of 146 subjects, published in April, they confirmed that parts of the corpus callosum were up to 23% wider in women than in men. They also measured thicker connections between the two hemispheres in other parts of women's brains.

Encouraged by the discovery of such structural differences, many researchers have begun looking for dichotomies of function as well. At the Bowman Gray Medical School in Winston-Salem, NC, Cecile Naylor has determined that men and women enlist widely varying parts of their brain when asked to spell words. By monitoring increases in blood flow, the neuropsychologist found that women use both sides of their head when spelling while men use primarily their left side. Because the area activated on the right side is used in understanding emotions, the women apparently tap a wider range of experience for their task. Intriguingly, the effect occurred only with spelling and not during a memory test.

Researchers speculate that the greater communication between the two sides of the brain could impair a woman's performance of certain highly specialized visual-spatial tasks. For example, the ability to tell directions on a map without physically having to rotate it appears stronger in those individuals whose brains restrict the process to the right hemisphere. Any crosstalk between the two sides apparently distracts the brain

from its job. Sure enough, several studies have shown that this mental-rotation skill is indeed more tightly focused in men's brains than in women's.

But how did it get to be that way? So far, none of the gender scientists have figured out whether nature or nurture is more important. "Nothing is ever equal, even in the beginning," observes Janice Juraska, a biopsychologist at the University of Illinois at Urbana-Champaign. She points out, for instance, that mother rats lick their male offspring more frequently than they do their daughters. However, Juraska has demonstrated that it is possible to reverse some inequities by manipulating environmental factors. Female rats have fewer nerve connections than males into the hippocampus, a brain region associated with spatial relations and memory. But when Juraska "enriched" the cages of the females with stimulating toys, the females developed more of these neuronal connections. "Hormones do affect things—it's crazy to deny that," says the researcher. "But there's no telling which way sex differences might go if we completely changed the environment." For humans, educational enrichment could perhaps enhance a woman's ability to work in three dimensions and a man's ability to interpret emotions. Says Juraska: "There's nothing about human brains that is so stuck that a different way of doing things couldn't change it enormously."

Nowhere is this complex interaction between nature and nurture more apparent than in the unique human abilities of speaking, reading and writing. No one is born knowing French, for example; it must be learned, changing the brain forever. Even so, language skills are linked to specific cerebral centers. In a remarkable series of experiments, neurosurgeon George Ojemann of the University of Washington has produced scores of detailed maps of people's individual language centers.

First, Ojemann tested his patients' verbal intelligence using a written exam. Then, during neurosurgery—which was performed under a local anesthetic—he asked them to name aloud a series of objects found in a steady stream of black-and-white photos. Periodically, he touched different parts of the brain with an electrode that temporarily blocked the activity of the brain. (This does not hurt because the brain has no sense

Language

In Choosing Her Words, a Woman Really Uses Her Head

For both sexes, the principal language centers of the brain are usually concentrated in the left hemisphere. But preliminary neurological studies show that women make use of both sides of their brain during even the simplest verbal tasks, like spelling. As a result, a woman's appreciation of everyday speech appears to be enhanced by input from various cerebral regions, including those that control vision and feelings. This greater access to the brain's imagery and depth may help explain why girls often begin speaking earlier than boys, enunciate more clearly as tots and develop a larger vocabulary.

If Johnny Can't Read, Is It Because He is a Boy?

Visit a typical remedial-reading class, and you'll find that the boys outnumber the girls 3 to 1. Stuttering affects four times as many boys as girls. Many researchers have used these and other lopsided ratios to support the argument that males, on average, are less verbally fluent than females. However, the discrepancy could also reflect less effort by teachers or parents to find reading-impaired girls. Whatever the case, boys often catch up with their female peers in high school. In the past few years, boys have even begun outscoring girls on the verbal portion of the Scholastic Aptitude Test.

Is Sex Really Necessary?

Birds do it. Bees do it. But dandelions don't. The prodigious spread of these winsome weeds underscores a little-appreciated biological fact. Contrary to human experience, sex is not essential to reproduction. "Quite the opposite," exclaims anthropologist John Tooby of the University of California at Santa Barbara. "From an engineer's standpoint, sexual reproduction is insane. It's like trying to build an automobile by randomly taking parts out of two older models and piecing them together to make a brand-new car." In the time that process takes, asexual organisms can often churn out multiple generations of clones, gaining a distinct edge in the evolutionary numbers game. And therein lies the puzzle: If sex is such an inefficient way to reproduce, why is it so widespread?

Sex almost certainly originated nearly 3.5 billion years ago as a mechanism for repairing the DNA of bacteria. Because ancient earth was such a violent place, the genes of these unicellular organisms would have been frequently damaged by intense heat and ultraviolet radiation. "Conjugation"—the intricate process in which one bacterium infuses genetic material into another—provided an ingenious, if cumbersome, solution to this problem, although bacteria continued to rely on asexual reproduction to increase their numbers.

Animal sex, however, is a more recent invention. Biologist Lynn Margulis of the University of Massachusetts at Amherst believes the evolutionary roots of egg and sperm cells can be traced back to a group of organisms known as protists that first appeared some 1.5 billion years ago. (Modern examples include protozoa, giant kelp and malaria parasites.) During periods of starvation, Margulis conjectures, one protist was driven to devour another. Sometimes cannibalistic meal was incompletely digested, and the nuclei of prey and predator fused. By joining forces, the fused cells were better able to survive adversity, and because they survived, their penchant for union was passed on to their distinct descendants.

From this vantage point, human sexuality seems little more than a wondrous accident, born of a kind of original sin among protozoa. Most population biologists, however, believe sex was maintained over evolutionary time because it somehow enhanced survival. The mixing and matching of parental genes, they argue, provide organisms with a novel mechanism for generating genetically different offspring, thereby increasing the odds that their progeny could exploit new niches in a changing environment and, by virtue of their diversity, have a better chance of surviving the assaults of bacteria and other tiny germs that rapidly evolve tricks for eluding their hosts' defenses.

However sex came about, it is clearly responsible for many of the most remarkable features of the world around us, from the curvaceousness of human females to the shimmering tails of peacocks to a lion's majestic mane. For the appearance of sex necessitated the evolution of a kaleidoscope of secondary characteristics that enabled males and females of each species to recognize one another and connect.

The influence of sex extends far beyond the realm of physical traits. For instance, the inescapable fact that women have eggs and men sperm has spurred the development of separate and often conflicting reproductive strategies. University of Michigan psychologist David Buss has found that men and women react very differently to questions about infidelity. Men tend to be far more upset by a lover's sexual infidelity than do women: just imagining their partner in bed with another man sends their heart rate soaring by almost five beats a minute. Says Buss: "That's the equivalent of drinking three cups of coffee at one time." Why is this so? Because, Buss explains, human egg fertilization occurs internally, and thus a man can never be certain that a child borne by his mate is really his. On the other hand, because women invest more time and energy in bearing and caring for children, they react more strongly to a threat of emotional infidelity. What women fear most is the loss of their mates' long-term commitment and support.

The celebrated war between the sexes, in other words, is not a figment of the imagination but derives from the evolutionary history of sex—from that magic moment long, long ago when our unicellular ancestors entwined in immortal embrace.

How Other Species Do It

Humans think there's nothing more natural than males and females in mutual pursuit of the urge to be fruitful and multiply. But nature follows more than one script. Not every species has two sexes, for example. And even when it does, neither their behavior nor their origin necessarily conforms to human notions of propriety. Some of the more bizarre cases in point:

Turtles

Among most reptiles, males are literally made in the shade. The gender of a turtle hatchling, for instance, is determined not by sex chromosomes but by the temperature at which it was incubated. Eggs that develop in nests located in sunny areas, where it is warm and toasty, give rise to females. Eggs nestled in shady places, where it may be 5°C (10°F) cooler, will yield a crop of males.

Whiptail Lizards

For some varieties of these lizards there's no such thing as a battle of the sexes. All of them are female. In a process known as parthenogenesis, they produce eggs that hatch without ever being fertilized. Yet, because they evolved from lizards that come in two sexes, pairs of these single-minded creatures will take turns imitating males and mount each other. The act apparently stimulates greater egg production.

Jacana Birds

Females usually rule the roost on every shore, marsh and rice field where these long-legged "lily trotters" abound. They are generally larger than the males, which are saddled with the duties of building the nest, incubating the eggs and raising the chicks. In fact in some varieties, female Casanovas regularly jilt their domestic-minded mates and search for more sexually available males.

Cichlids

These fish come in three sexes: brightly hued macho males, paler females, and male wimps that look and act like females. There are only a few sexually active males in a school. But the minute a piscine Lothario dies, an ambitious wimp rises to the occasion. His brain unleashes sex hormones that bring color to his scales and make him feisty, but he can revert to pallid impotence if challenged by a more macho fish.

of pain.) By noting when his patients made mistakes, the surgeon was able to determine which sites were essential to naming.

Several complex sexual differences emerged. Men with lower verbal IQs were more likely to have their language skills located toward the back of the brain. In a number of women, regardless of IQ, the naming ability was restricted to the frontal lobe. This disparity could help explain why strokes that affect the rear of the brain seem to be more devastating to men than to women.

Intriguingly, the sexual differences are far less significant in people with higher verbal IQs. Their language skills developed in a more intermediate part of the brain. And yet, no two patterns were ever identical. "That to me is the most important finding," Ojemann says. "Instead of these sites being laid down

more or less the same in everyone, they're laid down in subtly different places." Language is scattered randomly across these cerebral centers, he hypothesizes, because the skills evolved so recently.

What no one knows for sure is just how hardwired the brain is. How far and at what stage can the brain's extraordinary flexibility be pushed? Several studies suggest that the junior high years are key. Girls who the same aptitudes for math as boys until about the seventh grade, when more and more girls develop math phobia. Coincidentally, that is the age at which boys start to shine and catch up to girls in reading.

By one account, the gap between men and women for at least some mental skills has actually started to shrink. By looking at 25 years' worth of data from academic tests, Janet Hyde, professor of psychology and women's studies at the University of Wisconsin at Madison, discovered that overall gender differences for verbal and mathematical skills dramatically decreased after 1974. One possible explanation, Hyde notes, is that "Americans have changed their socialization and educational patterns over the past few decades. They are treating males and females with greater similarity."

Even so, women still have not caught up with men on the mental-rotation test. Fascinated by the persistence of that gap, psychologists Irwin Silverman and Marion Eals of York University in Ontario wondered if there were any spatial tasks at which women outperformed men. Looking at it from the point of view of human evolution, Silverman and Eals reasoned that while men may have developed strong spatial skills in response to evolutionary pressures to be successful hunters, women would have needed other types of visual skills to excel as gatherers and foragers of food.

The psychologists therefore designed a test focused on the ability to discern and later recall the location of objects in a complex, random pattern. In series of tests, student volunteers were given a minute to study a drawing that contained such unrelated objects as an elephant, a guitar and a cat. Then Silverman and Eals presented their subjects with a second drawing containing additional objects and told them to cross out those items that had been added and circle any that had moved. Sure enough, the women consistently surpassed the men in giving correct answers.

What made the psychologists really sit up and take notice, however, was the fact that the women scored much better on the mental-rotation test while they were menstruating. Specifically, they improved their scores by 50% to 100% whenever their estrogen levels were at their lowest. It is not clear why this should be. However, Silverman and Eals are trying to find out if women exhibit a similar hormonal effect for any other visual tasks.

Oddly enough, men may possess a similar hormonal response, according to new research reported in November by Doreen Kimura, a psychologist at the University of Western Ontario. In her study of 138 adults, Kimura found that males perform better on mental-rotation tests in the spring, when their testosterone levels are low, rather than in the fall, when they are higher. Men are also subject to a daily cycle, with testosterone levels lowest around 8 p.m. and peaking around 4 a.m. Thus, says June Reinisch of the Kinsey Institute: "When people say women can't be trusted because they cycle every month, by response is that men cycle every day, so they should only be allowed to negotiate peace treaties in the evening."

Far from strengthening stereotypes about who women and men truly are or how they should behave, research into innate sexual differences only underscores humanity's awesome adaptability. "Gender is really a complex business," says Reinisch. "There's no question that hormones have an effect. But what does that have to do with the fact that I like to wear pink ribbons and you like to wear baseball gloves? Probably something, but we don't know what."

Even the concept of what an innate difference represents is changing. The physical and chemical differences between the brains of the two sexes may be malleable and subject to change by experience: certainly an event or act of learning can directly affect the brain's biochemistry and physiology. And so, in the final analysis, it may be impossible to say where nature ends and nurture begins because the two are so intimately linked.

