Heterosexual couple? No—a single model photographed in both female and male gender roles. (From the series Alone Time, by JJ Levine.)
In this chapter we discuss how men and women come to differ from each other. First we describe the origins of the physical sex differences that have been the topics of previous chapters. A cascade of genetic and hormonal factors, operating during both prenatal and postnatal life, guides this process of differentiation. There are also psychological sex differences—in cognition, personality, and sexuality. These differences are also influenced by biological factors, but they are only one part of the story, because social factors also play a role.

A simple male/female dichotomy encompasses most people, but by no means all. In terms of physical differences, there are intersex individuals—those whose anatomical sex is to some degree intermediate or ambiguous. Intersexuality results from unusual genetic or hormonal conditions during development. In terms of mental traits, there are transgender individuals—those whose internal sense of their own sex is partially or fully discordant with their anatomical sex at birth. The developmental pathways that lead to a transgender identity are not well understood, but here too biological factors are thought to play some role.

Both intersex and transgender people face many challenges in life, ranging from personal medical issues to broader questions about their position and role in society. Studying and listening to these individuals not only helps us understand their specific circumstances, but also teaches us something about the limitations of terms like “male” and “female,” “masculine” and “feminine.”
CHAPTER 4

Genes and Hormones Guide Sex Development

**Sex chromosomes** and genes are the primary arbiters of sex. Recall that every individual (with rare exceptions) possesses a pair of sex chromosomes in every cell nucleus in her or his body. One of these chromosomes is inherited from the person’s mother, via her ovum, and is always a large **X chromosome**. The other is inherited from the person’s father, via his sperm, and is either an X chromosome or a much smaller **Y chromosome**. An embryo that possesses two Xs develops as a female; an embryo with one X and one Y develops as a male (**Figure 4.1**). Thus it is the father’s genetic contribution to the embryo that determines its sex. (We will find later that there are exceptions to this rule.)

A sex-determining gene called **SRY**, located on the Y chromosome, is the initial switch whose presence directs sexual development along a male pathway and whose absence allows development to follow a female pathway. Many more genes, linked together in complex networks, are required for the formation of the gonads—the ovaries in females or the testes in males (Quinn & Koopman, 2012). Female development also requires the activity of genes, such as one called **WNT4**, that actively suppress male development (Ainsworth, 2015).

**Female and male reproductive tracts develop from different precursors**

For the first several weeks of development there is no visible difference between female and male embryos. At about 6 weeks after conception, early in the development of the gonads, two pairs of ducts run from the gonads to the outside of the embryonic body at the future site of the external genitalia (**Figure 4.2A**). One pair, the **Müllerian ducts**, are the precursors of the female reproductive tract. The other pair, the **Wolffian ducts**, are the precursors of the male reproductive tract.

Notice that embryos of both sexes begin with a pair of both kinds of ducts. Female development involves eliminating the Wolffian ducts and promoting the development of the Müllerian ducts, while male development involves eliminating the Müllerian ducts and promoting the development of the Wolffian ducts. The breakup of the unwanted ducts in each sex is shown in **Figure 4.2B**.

Male embryos eliminate the Müllerian ducts by means of **anti-Müllerian hormone (AMH)**. This hormone, secreted by the developing testes, diffuses to the nearby Müllerian ducts and causes them to degenerate. Beginning at about 3 months after conception, the testes secrete testosterone. This hormone diffuses down the Wolffian ducts, triggering each one to develop into an epididymis, vas deferens, and seminal vesicle. Testosterone

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**Figure 4.1 Human chromosomes** Women and men have different pairs of sex chromosomes: Women have two X chromosomes, men have one X and one Y (as shown here at the lower right). The other 22 pairs of chromosomes are the same in women and men. (Pr. Philippe VAGO/ISM/Medical Images.)
Figure 4.2  Male and female reproductive tracts develop from different precursor structures (A), the Wolffian and Müllerian ducts. (The male and female gonads [testes and ovaries] have a common origin and do not belong to either duct system.) (See Web Activity 4.1: Development of the Male and Female Reproductive Tracts.) These micrographs of developing reproductive tracts in human embryos (B) are labeled with fluorescent probes. The sexually undifferentiated embryo at 9.5 weeks gestation (top) shows presence of both Wolffian (blue) and Müllerian (pink) ducts. The male embryo at 10 weeks (bottom left) shows the Müllerian duct beginning to break up (arrow). The female embryo at 13 weeks (bottom right) shows the Wolffian duct beginning to break up (arrow). All scale bars are 0.4 mm. (B from Belle et al., 2017.)

also promotes development of the prostate gland, although this gland is not derived from the Wolffian ducts.

In female embryos, the absence of testosterone causes the Wolffian ducts to degenerate. The absence of AMH allows the Müllerian ducts to persist and to develop into the oviducts, uterus, and deeper part of the vagina. Although the development of the female reproductive tract is the “default” pathway, in the sense that it goes forward in the absence of hormonal instructions to the contrary, it is an active process that is guided by many genes in the developing tract.

These processes take place at a time when the developing structures are still tiny—note that the scale bars in Figure 4.2B are only 0.4 mm long—so it is a relatively easy matter for hormonal signals to spread from the testes to the ducts.
Female and male external genitalia develop from the same precursors

Whereas the reproductive tracts of females and males develop from different precursors, the external genitalia of both females and males develop from the same early tissues. As shown in Figure 4.3, at about 4 weeks postconception the embryo's anogenital region consists of a slit known as the cloaca. The cloaca is closed by a membrane. It is flanked by two urethral folds, and to the side of each urethral fold is a raised region named the genital swelling. At the front end of the cloaca is a small midline protuberance called the genital tubercle. By 2 weeks later, the urethral folds have fused with each other near their posterior (rear) end. The portion behind the fusion point, called the anal fold, eventually becomes the anus. The region of the fusion itself becomes the perineum. (Even in adults, the line of fusion is visible as a midline ridge or scar, which can be seen most easily with the help of a hand mirror.)

During the fetal period, the region in front of the fusion point, which includes the opening of the urogenital sinus, gives rise to the external genital structures in both sexes. As with the internal reproductive tracts, the female external genitalia develop by default, that is, in the absence of hormonal or other external signals. The genital swellings develop into the outer labia. The urethral folds develop into the inner labia, the outer one-third or so of the vagina, and the crura (deep erectile structures) of the clitoris (see Chapter 2). The genital tubercle develops into the glans of the clitoris. Remnants of the cloacal membrane persist as the hymen.

The vagina, therefore, develops from two different sets of tissues. The outer portion of the vagina, which develops from the urethral folds, is more muscular and more richly innervated than the inner portion, which develops from the Müllerian ducts.

In male fetuses, the presence of circulating testosterone, secreted by the testes, is required for the normal development of the genitalia. The urethral folds fuse at the midline, forming the shaft of the penis and enclosing the urethra. If this midline fusion is incomplete, a condition called hypospadias results, in which the urethra opens on the underside of the penis or behind the penis (Mayo Clinic, 2017a). The genital swellings also fuse at the midline, forming the scrotum. The genital tubercle expands to form the glans of the penis. The prostate gland develops—as the homologous paraurethral glands in females probably do—from tissue beneath the urethral folds.

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**cloaca**  The common exit of the gastrointestinal and urogenital systems; in humans it is present only in embryonic life.
Thus, the same embryonic structures that become the outer labia in females become the scrotum in males. The structures that become the inner labia in females become the shaft of the penis in males. The structure that becomes the glans of the clitoris becomes the glans of the penis in males.

Why isn’t female development driven by secretion of estrogens from fetal ovaries in the same way that male development is activated by testosterone from fetal tissues? The answer is probably that fetuses of both sexes are exposed to estrogens coming from the mother’s body. Thus, if estrogens were the driver for female-typical development, male fetuses too would follow that pathway, at least to some degree.

**The gonads descend during development**

In fetuses of both sexes, the gonads (ovaries and testes) begin their development in an area near the kidneys and later move downward. By about 10 weeks postconception they are positioned near the top of the pelvis. In females, the ovaries remain in this position for the remainder of fetal life, but after birth they gradually descend in the pelvis and end up on either side of the uterus.

In males the testes, which may now be called testicles, move even greater distances (Figure 4.4). At 6 to 7 months postconception they descend into the pelvis, and shortly before birth they move down into the scrotum. As each testicle enters the scrotum, it draws various structures with it, including the vas deferens, blood vessels, and nerves—which make up the spermatic cord. The connection between the pelvic cavity and the testicles is usually sealed off after the testicles descend.

In 2% to 5% of full-term newborn boys, one or both testicles have not yet arrived in the scrotum. In many of these boys, the tardy testicles will arrive within a few weeks after birth, but if they are still no-shows when a boy reaches 3 months of age, the condition is considered a disorder and is termed **cryptorchidism** or simply undescended testicles (Mayo Clinic, 2017b). About 1% to 2% of boys have this condition. Usually, the missing testicles have been held up somewhere along the path of their fetal descent—most commonly in the groin. Cryptorchidism is associated with lowered fertility and with an increased risk of testicular cancer after puberty. Undescended testicles can often be surgically moved into the scrotum; this procedure is best done before 2 years of age. Correction of cryptorchidism improves the prospects for fertility but does not eliminate the increased risk of cancer. Once they are in the scrotum, however, the testicles can be monitored by regular self-examination, thus increasing the likelihood that any developing cancer will be detected at an early stage. Both testicles are at increased risk of cancer even if only one of them is undescended.

**Puberty is sexual maturation**

Most prenatal sex development occurs during weeks 8 through 24 of fetal life, when testosterone levels are high in male fetuses. A second surge in testosterone production (to...
adult levels) occurs in boys for the first 6 months of postnatal life. Further maturation of the male genitals occurs during this half-year period. After that, sex hormone levels fall and remain low in both sexes until puberty, the transition to sexual maturity.

At the onset of puberty both testicles and ovaries begin secreting sex hormones at levels sufficient to initiate reproductive maturity, and the bodies and brains of girls and boys begin to transform into those of women and men. Because of the great impact of this transformation on psychosexual development, we postpone most of our discussion of puberty to Chapter 10.

The brain also differentiates sexually

Although women’s and men’s brains are very similar, early hormonal influences do produce some differences in brain organization. After adjustment for sex differences in overall brain volume, at least 10 brain regions are larger, on average, in women than in men, and at least 14 regions are larger in men than in women (Ritchie et al., 2017). The cerebral cortex is a mosaic of regions that are larger in one sex or the other (Figure 4.5). There is considerable overlap between the sizes of each of these sexually differentiated brain regions in women and men, but by measuring several of such regions it is possible to tell the sex of an individual brain with 93% accuracy (Chekroud et al., 2016). Some subcortical regions that play a specific role in sexual behavior, such as a region within the hypothalamus, show even more pronounced differences between the sexes, as will be described in Chapter 12.

Brain connections also differ between the sexes: Connections between the left and right sides of the brain are stronger in women than men, whereas connections within each side of the brain are stronger in men than women (Ingalhalikar et al., 2014). There are also differences in the metabolism of neurotransmitters such as serotonin and dopamine. Such differences offer a potential explanation for differences in the prevalence of certain mental disorders in the two sexes, such as the greater prevalence of depression among women and the greater prevalence of alcoholism in men (Hall & Steiner, 2013).

The difference in circulating androgen levels in the two sexes (higher levels in males than in females) is the main driver of sexual differentiation in the brain, as it is in the rest of the body. The brain also “knows” its own intrinsic sex, however, in the sense that the nucleus of each brain cell carries the sex chromosomes corresponding.
to that individual’s sex—XX or XY in most cases. These two influences can be disentangled in experimental animals such as mice. It has been shown, for example, that mice with chromosomally male brains make a greater effort to obtain rewards, such as food, than those with chromosomally female brains, even in the absence of any hormonal sex differences (Arnold et al., 2016).

**Sex Development Is Not Always Binary**

Given the complexity of the genetic and hormonal cascade that guides sex development, it is perhaps surprising how regularly it leads to one of two binary end points—a healthy, fertile woman or man. Yet deviations from stereotypical female or male development do sometimes occur. Some of these are harmless variations that should be considered examples of sexual diversity. Others, however, impair fertility or other aspects of physical health and are therefore called **disorders of sex development** (Ono & Harley, 2013). Some examples of these disorders are discussed below.

**Unusual sets of chromosomes affect growth and fertility**

The standard sets of sex chromosomes are XX (female) and XY (male), but other combinations are possible. These can arise during cell divisions in the production of ova or sperm, or during the first cell division after fertilization. Embryos with atypical numbers of sex chromosomes are very common, but the great majority die early in development. Among those that survive, the following are the most common variations:

- **Klinefelter syndrome.** About 1 in 1000 live-born babies possesses one or more extra X chromosomes (XXY or XXXY). These individuals are male because they possess a Y chromosome with its SRY gene, which masculinizes their bodies. Some XXY and XXXY males are indistinguishable from XY males, but others suffer from a characteristic collection of medical conditions known as Klinefelter syndrome. As children they may have slow motor development and delayed speech. Puberty may be delayed or absent. Men with Klinefelter syndrome commonly have low testosterone levels, a small penis and testicles, sparse body and facial hair, and some breast development. They are also generally taller than average. Most XXY and XXXY males have a low sperm count, and they are usually infertile. It is often stated that men with Klinefelter syndrome are not especially likely to be gay or bisexual, but the limited available evidence suggests that they may be (Schiavi et al., 1988; Herlihy et al., 2011). In one informal survey of 63 adult men with Klinefelter syndrome, more than half identified as gay or bisexual (Bucar, 2014).

- **Turner syndrome.** About 1 in 4000 live-born children has one X chromosome and no Y chromosome (XO). They are girls, since they lack the Y chromosome and its SRY gene. These girls tend to be short, with a characteristic broad chest and neck. They lack functional ovaries, and without medical assistance they do not enter puberty and are infertile. Some may have cognitive deficits, but they are not intellectually disabled (Kong & Kessels, 2014). Women with Turner syndrome have excelled in a variety of careers (Figure 4.6). Many women with Turner syndrome are actually “mosaics,” meaning that their bodies are composed of both XO and XX cells; these women have a milder form of the syndrome (Hook & Warburton, 2014).

- **XYY syndrome.** About 1 in 1500 babies possesses one X chromosome and two Y chromosomes. They are male, but they may have atypical genital anatomy and low fertility. The cerebral cortex develops in an atypical fashion, intelligence tends to be low, and autism-related symptoms are common (Bryant et al., 2012; Lepage et al., 2014).

**FAQ**

**Will a man with Klinefelter syndrome pass it on to his children?**

No. He will need medical assistance to become a father, but any children he does have are very unlikely to have Klinefelter syndrome.
**triple-X syndrome** A collection of traits caused by the possession, in a female, of three X chromosomes rather than two.

**intersex** Having a biologically ambiguous or intermediate sex.

**gonadal intersexuality** The possession of both testicular and ovarian tissue in the same individual.

**androgen insensitivity syndrome** (AIS) The congenital absence of a functional androgen receptor, making the body unable to respond to androgens.

- **Triple-X syndrome.** About 1 in 1000 newborns possesses three X chromosomes (XXX). These babies are girls. They commonly have atypical facial features (wide-set eyes and dental problems) and they may have learning disabilities, but not all XXX girls are affected.

With the increasing use of prenatal genetic testing (see Chapter 8) many children with atypical sex chromosomes are being diagnosed before birth. These children tend to fare better than those diagnosed postnatally, at least in the case of the triple-X syndrome (Wigby et al., 2016). This suggests that clinicians were previously only seeing the more severely affected children—those whose parents thought that they needed medical attention—while for many other children the impairments are quite mild. Still, impaired fertility is an issue that affects the great majority of people with unusual sets of sex chromosomes. Some of them can become parents with the help of assisted reproductive technologies (see Chapter 8).

**The gonads or genitals may be sexually ambiguous**

Some disorders of sex development cause the gonads or the genitals to end up in a state that is intermediate between male and female forms or has some features of both. Persons affected by such conditions may be referred to as (or describe themselves as) **intersex.** Here are some examples:

- **Gonadal intersexuality.** In this rare condition, the affected person possesses both ovarian and testicular tissue—either on different sides of the body or in gonads that contain mixtures of the two tissues. The cause is not usually known, but chromosomal anomalies may be to blame. The appearance of the external genitalia varies, but most persons with this condition look like women and identify as such. They are usually infertile, and they are at increased risk of urinary problems and gonadal cancer.

- **Androgen insensitivity syndrome (AIS).** This is a genetic condition in XY individuals in which androgen receptors are completely or partially nonfunctional. People with complete AIS lack the reproductive tract of either sex and are therefore infertile: The male tract fails to develop because the Wolffian ducts are insensitive to testosterone, and the female tract fails to develop because the testes still secrete anti-Müllerian hormone. The external genitalia look typically female at birth. The outer part of the vagina does develop, but it is short and blind ending; it can be lengthened by the use of dilators or by surgery if that is desired. The testicles remain inside the body, and they are usually removed surgically at some point on account of a heightened risk of cancer. Persons with complete AIS look like and identify as females, and their condition often remains unrecognized until puberty, when they fail to menstruate. The external changes associated with female puberty can be induced by administration of sex hormones. Individuals with partial AIS have a more variable anatomy, appearance, and sense of which sex they are (see “Gender identity does not always match anatomical sex,” on page 97). Some men with a very mild version of the condition may be able to father children.
• **Congenital adrenal hyperplasia (CAH).** This condition is caused by a mutation in one of the genes involved in steroid metabolism. As a result the adrenal glands secrete insufficient levels of the steroids that control salt and water balance, and severe forms of the disorder are fatal if untreated. The adrenals also secrete unusually high levels of androgens. In XX fetuses, which otherwise would develop into typical girls, the high levels of androgens cause a partial masculinization of the genitals: The clitoris is often enlarged, for example, and the labia may be partially fused in the midline (Figure 4.7). These changes can be prevented by noninvasive prenatal testing and treatment (Kazmi et al., 2017). Most children with CAH are raised as girls, but some children with very marked masculinization are raised as boys.

For many children with ambiguous genitalia, the cause is not known. Whatever the cause, however, treatment of these children raises a host of difficult ethical questions. Should the child be “assigned” to one sex or the other, and if so, should the child’s genitals be surgically altered in order to bring them into greater conformity with the assigned sex? What should the child be told, and as which sex should the child be raised? Partly in response to activism by people with intersex conditions, there has been a movement away from early surgery, unless it is medically essential. The idea is to postpone irreversible decisions until affected children are able to make known their own wishes and play an informed role in the decision-making process (Lee et al., 2016). The secrecy and denial that often surround these cases are harmful to children’s psychological development and self-acceptance, according to the testimony of intersex people (Box 4.1). In 2017 a well-known supermodel, Hanne Gaby Odiele, came out as intersex (she has AIS) and appealed for an end to unnecessary surgery on intersex children (Wang, 2017).

The existence of these various conditions makes clear that a person’s biological sex can be defined by several different criteria, which are not necessarily all in agreement with each other. “Chromosomal sex” means the possession of XX, XY, or some other complement of sex chromosomes. “Gonadal sex” means the possession of ovaries, testes, or a combination of the two. “Anatomical sex” usually refers to the possession of the external genitalia typical of females or males, or not clearly one or the other. (Gonadal sex is anatomical too, of course, but this is not so apparent without diagnostic procedures.) A person’s **natal sex** is usually taken to mean their anatomical sex at birth.

Sorting out these different criteria is important for the appropriate treatment of intersex individuals who have medical conditions. Socially, the variety of biological criteria can lead to all kinds of difficulties. For example, there have been endless controversies concerning athletes who compete as women but who have some form of intersexuality; in some cases this may give them a competitive advantage over other women. Some of these athletes have been subjected to humiliating tests aimed at determining their “true” biological sex, even though there may be no unique criterion to rely on. Declaring that an athlete who has always thought of herself as a woman is “biologically male” can be psychologically devastating, especially if she comes from a developing country where there is little knowledge of intersexuality.

The organizations that regulate international sport are still wrestling with this issue. There can never be an absolutely “level playing field” in sports, however. With that in mind, many experts believe that any person with an intersex condition who was raised as female should be allowed to participate in women’s competitions (Genel et al., 2016).
Katie Baratz Dalke graduated from the Perelman School of Medicine at the University of Pennsylvania in 2011; she is now a psychiatrist practicing in Philadelphia. She is also a board member of Advocates for Informed Choice, which supports the civil rights of children born with variations of sexual anatomy. Baratz Dalke wrote the following essay for the previous edition of this textbook:

By all accounts, I was a perfectly healthy and normal baby girl, thriving under the love and attention of my family and constantly seeking opportunities to sing, dance, and try on my mother’s dresses and jewelry—the more sparkles, the better!

My family’s world changed forever when I was 6. That year, I collapsed in the shower with a painful lump in my groin. Convinced I had a hernia, my parents, both doctors, took me to the hospital. But when surgeons operated, they found a testicle that had started descending. Tests soon showed that instead of the typical XX chromosomes found in girls, I had the XY chromosomal complement of boys.

The doctor told my stunned parents that I had complete androgen insensitivity syndrome. He assured them that I would grow up normally, fall in love, and have a family through adoption, but they shouldn’t tell me that I had XY chromosomes and testicles.

My parents did decide to tell me, but gradually. As a young girl, they showed me an anatomy book and told me that the uterus was the nest inside a woman where the baby grew. I didn’t have one, but I could adopt a baby that would grow in my heart and be part of my family. I learned about periods and knew I wouldn’t get them. Although I was sad that I wouldn’t be able to become pregnant and felt different from my girl friends, I thought that was it—until I turned 16.

That year, my sister came home from school with a biology project. Everyone in her class was assigned a condition to research, and she randomly drew AIS. “Mom and Dad, it sounds a lot like Katie,” she said at dinner one night. “And there’s a woman with Mom’s name on the support group website.” My parents looked at each other. They’d wanted to wait until I was 18, but there was no going back now. They told me and my brother and sister everything. My dad finished up by saying, “You’re still our girl.”

I was devastated and angry, feeling betrayed by my parents and my own body. Looking back, I know those emotions came from a fear of what was wrong with me, plus the eternal conflict of adolescence: someone else deciding what’s best for you.

High school was grim. I went through puberty very late, and was taller and thinner than most of the boys all the way through senior year. I had horrible insomnia and tons of anxiety that sometimes veered into depression. I felt as if all of my girl friends were living a life I couldn’t access, one marked by the common experiences of periods, dating, and an effortless transition to womanhood. I, on the other hand, had to take estrogen pills to develop a womanly figure, and I had to use a vaginal dilator for 30 minutes a day so that I could comfortably have sex.

College was better. In my senior year, I met Sam, a runner and English major with a romantic streak. We started talking, and before I knew it, he was courting me with chocolate-covered strawberries and Marilyn Monroe movies. Shortly after we began dating, I knew that it was time to tell him about my AIS. He listened patiently and assured me that nothing about my genes or gonads changed the way he felt about me.

Four years later, we were married on an unseasonably warm New Year’s Eve, surrounded by our friends, family, and yes, lots of sparkles. We are beginning our lives together and planning to adopt our children, although I still feel pangs of sadness when I think about how much I’d like to be able to have children biologically.

I’m also really involved in the AIS community. It feels incredible to help others with the pain I went through—it was only after finding the AIS Support Group, the summer before college, that I realized AIS could be part of my life without dominating it, and that the loneliness I’d felt abated.
There Are Sex Differences in Many Mental Traits

There are no measurable mental traits that distinguish unambiguously between men and women, nor are there likely to be many that are quantitatively identical in the two sexes. When we talk about psychological sex differences, we are talking about matters of degree and not absolute differences. Still, some sex differences are marked enough to raise important questions about their origin and their impacts on our lives. We first describe some of these differences, without regard to causation. We then go on to discuss theories about how the differences arise.

Gender identity does not always match anatomical sex

In its simplest conception, a person’s gender identity is his or her response to the question “Do you feel as if you are a woman or a man?” The great majority of people give the answer that we would expect based on their genital anatomy, but a few individuals give a different answer: anatomical women who say they feel like men and anatomical men who say they feel like women, as well as others for whom neither “female” nor “male” satisfactorily describes how they think about themselves. The latter may describe themselves as “non-binary.” The existence of these transgender persons, discussed in greater detail later in the chapter, makes us realize that there must be something more to gender identity than simply reporting on one’s genitals.

Gender identity has a more blurred distribution in the general population than is captured by a simple “male/female” dichotomy. If, for example, people are asked to rate their own “masculinity/femininity” on a scale in comparison with other persons of the same sex, responses are quite variable, and men’s and women’s responses overlap (Lippa, 2008). In fact, if you tried to guess people’s sex based on where they placed themselves on such a scale, you would be wrong about 1 time in 4. We will revisit the spectrum of subjective masculinity/femininity when we discuss the topic of sexual orientation (see Chapter 12).

Women and men differ in a variety of cognitive and personality traits

Some sex differences are seen in aspects of mental life having to do with perception, motor performance, reasoning, judgments, knowledge, and memory—collectively referred to as cognitive traits (Miller & Halpern, 2014). All cognitive sex differences relate to averages; they do not predict the performance of any individual. That said, females (both women and girls) outperform males in reading and other verbal skills, as well as in some memory tasks such as face recognition (Figure 4.8) and object location recall. On the other hand, males outperform females in some visuospatial skills, such as the ability to mentally rotate three-dimensional objects represented by line drawings (Figure 4.9), as well as in mathematics (Stoet & Geary, 2013; Reilly et al., 2015; Frenken et al., 2016). The differences just listed are moderate to large in size, but they are smaller than obvious physical differences between the sexes, such as the difference in average height. Many other cognitive traits show smaller, sometimes trivial differences between the sexes.

Other sex differences have to do with feelings, attitudes, goals, interests, values, and behaviors (including sexual behavior)—traits that loosely cluster under the term personality. Males are more aggressive than women, both in laboratory studies and

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* For statistics buffs, they show effect sizes ($d$) of about 0.4–1.0.

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gender identity A person’s subjective sense of being male, female, or not exclusively one or the other.

Cognitive Related to the aspects of the mind that process knowledge or information.

Personality The collection of mental and behavioral traits, especially those related to emotions and attitudes, that characterizes an individual.

**Figure 4.8** Female superiority in face recognition may reflect the fact that women inspect faces more carefully. Here a woman’s (left) and a man’s (right) gazes are tracked as they look at a face for 5 seconds: The woman makes many more eye movements (15 vs. 9), thus generating a more vivid mental picture of the face. (Courtesy of Brendan Stanley.)
in real life (Archer, 2004). They are also more willing to engage in risky, novel, or intense activities and less tolerant of boredom (Cross et al., 2013). Females have greater nurturance (care-giving disposition) and emotional intelligence (Joseph & Newman, 2010).

Another personality difference has to do with interests, and this is one of the strongest sex differences, statistically speaking: Women’s interests are more people related and empathetic, whereas men’s interests are more thing related (Su & Rounds, 2015). This difference may incline women and men toward different occupations, but it is difficult to disentangle such internal influences from the effects of social expectations and discrimination, which certainly exist.

One cross-cultural study, based on data from 25,000 women and men in 26 cultures, found robust cross-cultural gender differences in six personality factors: Men scored higher in factors named “assertiveness” and “openness to ideas,” while women scored higher in “agreeableness,” “warmth,” “openness to feelings,” and “neuroticism” (Costa et al., 2001).

There are many differences in sexuality

More directly relevant to the overall subject of this book are sex differences related to sexuality. Here we summarize the most important of these differences:

- Men have a stronger sex drive than women—they think more often about sex, have more frequent and more intense sexual fantasies, want more frequent sex, are more likely to initiate sex, make more sacrifices for sex, and are less willing to forgo sex (Baumeister et al., 2001; Sine, 2014) (see Chapter 5).

- Women express more restrictive attitudes than men regarding casual sexual encounters, they are less desirous of engaging in such encounters, and they make fewer attempts to do so. This is true not just in the United States, but also in over 50 nations where women and men have been surveyed, and this sex difference has been fairly constant over time (Lippa, 2009; Sprecher et al., 2013). The topic of how women and men view casual sex is covered in more detail in Chapters 7 and 11.

- Women and men tend to seek different things in their sex partners. Women are typically attracted to older partners, men to younger ones. Women tend to be more concerned than men with their partners’ status or wealth; men are more concerned than women with their partners’ physical attractiveness. These differences exist across cultures—in Chinese college students just as much as in American students, for example (Toro-Morn & Sprecher, 2003). This topic is covered in Chapter 5.

Wanton violence, such as soccer hooliganism, is largely a male pastime. (© A_Lesik/Shutterstock.com.)
Men are more interested in visual sexual stimuli generally, including pornography, and are more sexually aroused by such stimuli than are women (Janssen et al., 2003). The sex difference in pornography consumption has not narrowed appreciably since the 1970s (Wright et al., 2013).

- Women and men both experience jealousy, but they tend to experience different kinds of jealousy (Buss, 2013; Frederick & Fales, 2016). Women are more likely than men to experience emotional jealousy—that is, to fear that their male partner may commit himself emotionally to a different woman. Men, in contrast, are more likely than women to experience sexual jealousy—to fear that their female partner is being physically unfaithful to them. The role of jealousy in sexual relationships is discussed in Chapter 7.

- There are differences in the sexual orientations of men and women. First, obviously, there is the fact that most women are sexually attracted to men, whereas most men are sexually attracted to women. Beyond that, the distribution of non-heterosexual orientations differs between the sexes: The majority of non-heterosexual women are bisexual, whereas the majority of non-heterosexual men are homosexual (gay). These and other sex differences in the realm of sexual orientation are taken up in Chapter 12.

- Men are much more likely than women to desire and engage in unusual forms of sexual expression, such as fetishes.

- Men are more prone to suffer from pathological forms of sexuality known as paraphilic disorders (see Chapter 11) and to engage in rape, child molestation, and other forms of sexual coercion (see Chapter 16).

- Men are much more likely than women to pay for sex, and more women than men receive money for sex (see Chapter 17).

- The sexual response cycles of women and men differ (see Chapter 5). Men are aroused and reach orgasm faster than women. Many women but few men experience multiple orgasms within one cycle of sexual arousal.

- Males masturbate more than females, beginning at puberty (Gerressu et al., 2008) (see Chapter 10).

- Women's reproductive capacity ceases rather abruptly at menopause, whereas men's reproductive capacity declines gradually over the entire adult life span (see Chapter 11).

- Reproduction is more of a “gamble” for men than for women: Some men have large numbers of children and other men have none, whereas women are more likely to have some moderate number of children. This difference in reproductive variance encourages sexual risk taking by men. This topic is discussed further below and in Appendix A.

- Sexual behavior has more direct potential consequences for women—in terms of pregnancy and motherhood—than it does for men, and sexually transmitted infections have a much higher risk of impairing fertility in women than in men (see Chapter 15). So, quite aside from the sexual double standard mentioned in Chapter 1, the choice to engage or not engage in sexual contacts may be perceived as a more serious or fraught decision for women than for men.

Stated in this brief fashion, some of the statements listed above may strike you as more akin to stereotypes (opinions about classes of people that are based on overgeneralization or prejudice) than to well-documented facts. As generalizations about average differences between women and men they are valid, but there are also many important exceptions and nuances that we cannot touch on here. We urge you to withhold judgment until we have the opportunity to discuss all these topics in more detail.
greater detail. We should also emphasize that documenting the existence of sex differences says nothing about the morality of women’s or men’s sexual behavior, nor whether differences that exist today are permanent or changeable.

With regard to all these sex differences in cognition, personality, and sexuality, there is still controversy about their reality, magnitude, and meaning. Psychologist Janet Hyde and others have argued that sex differences, if they exist at all, are so small, and show so much overlap between women and men, that they are irrelevant in any practical context (Hyde, 2014). Others say that Hyde ignores some large and well-replicated sex differences, both in mental traits and in brain organization, and that even the overlapping traits become far more distinct when measured collectively (multivariate analysis) (Lippa, 2006; Del Giudice et al., 2012; Cahill, 2014; Chekroud et al., 2016).

Many sex differences arise early in life

Boys and girls show quite marked differences in behavior from a young age. Even before birth, male fetuses are more active than females, and this difference in activity level increases during childhood (Campbell & Eaton, 1999). Sex differences in toy preferences are detectable as early as 3 months of age (Alexander et al., 2009) and are well established by 1 year (Servin et al., 1999): Boys prefer toy vehicles, toy weapons, balls, and construction toys, while girls prefer dolls and toy kitchen implements (Berenbaum & Snyder, 1995; Alexander & Saenz, 2012) (Figure 4.10). This sex difference has been observed in many different countries and over different time periods (Todd et al., 2017). Boys engage in more competitive, strenuous, and rough-and-tumble play and aggression than do girls, who engage in more conversation and socializing (Maccoby, 1998; Holmes, 2012). By 4 years of age most boys prefer to play with boys, and most girls with girls. Girls’ and boys’ play is governed by different moral rules: Girls appeal to social conventions (“The teacher will be angry if we don’t play nicely”), while boys are more likely to refer to principles of justice (“Hands off the car, it’s mine!”) (Tulviste & Koor, 2005). Throughout the school years girls outperform boys in most subjects, especially in those that are language related (Voyer & Voyer, 2014).
Biological Factors Underlie Sex Differences

So far, we have attempted to describe sex differences without drawing any conclusions about how these differences arise. We now turn to the topic of causes. Researchers have taken a wide variety of approaches to this topic and have viewed sex differences through the lenses of several different disciplines. We begin by discussing the biological approach.

Evolutionary forces act differently on females and males

The field of evolutionary psychology investigates how gender characteristics have been molded by a long period of human and prehuman evolution. During this period, the struggle to survive and reproduce has favored the spread of genes that predispose their owners to certain sex-specific traits and behavior patterns. Here are three examples of how evolutionary psychology attempts to explain aspects of women’s and men’s sexual strategies (Buss, 2011).

INTEREST IN CASUAL SEX

Men’s greater interest in casual sex can be explained in terms of evolutionary processes. The cost of fathering a child—when stripped to its biological essentials—is minimal. In theory, therefore, a man can have very large numbers of offspring if he impregnates many different women and walks away from each. Women, however, have to invest so much time and resources into pregnancy and child care that they are very limited in the total number of offspring they are able to have. Therefore, it’s argued, genes evolved that promote men’s interest in casual sex and women’s choosiness about who they mate with.

JEALOUSY

Women have always been certain of the identity of their children: Any child to whom a woman gave birth was necessarily her genetic offspring. A man, however, could not be certain which children were his. Even in a supposedly monogamous relationship, there was always the risk that his partner might have sex with someone else and that he might end up helping to rear a child that was not genetically his own. According to David Buss, this difference between the sexes, persisting over countless generations, led to the spread of genes promoting the different styles of jealousy in women and men described above. Men’s sexual jealousy served to reduce the likelihood of rearing children that were not theirs; women’s emotional jealousy served to reduce the likelihood that their male partners would abandon them and leave them without resources to rear their children (Buss, 2013).

COGNITIVE

Evolutionary psychologists believe that cognitive differences between the sexes have arisen because of a long-standing division of labor between women and men. Because of their greater physical strength, it is argued, men have always taken a leading role in hunting, warfare, and exploration; women, because of their biologically mandated role in pregnancy and breast-feeding, have taken a leading role in activities near the homesite. Over many generations, such a division of labor might well have favored the spread of genes for different cognitive skills in the two sexes, such as the greater throwing and navigating skills of men and the greater hand and finger dexterity of women.

To the extent that these evolutionary theories are correct, one might expect that nonhuman species (especially those closely related to us) would exhibit some of the same sex-differentiated traits that humans do, even without the benefit of human culture. Experiments and field observations show that they do, for example in the area of play behavior (see Box 4.2). In addition, the greater social engagement of girls than boys is echoed in the behavior of female and male monkeys as young as 2 to 3 weeks of age (Simpson et al., 2016).
Experiments demonstrate a role for sex hormones

Earlier in this chapter we mentioned the structural and functional differences between the brains of women and men. These differences result, at least in part, from differences in circulating levels of sex hormones during fetal life, at puberty, and during adult life. So, do hormones contribute to the psychological differences between the sexes?

Experiments in animals certainly suggest so. Biologists have altered the hormonal environments of fetal rats and monkeys—by adding testosterone to a female fetus, for example, or by blocking the action of a male fetus’s own testosterone. In postnatal life the treated females behave in many ways like males, and vice versa.

Although it would obviously be unethical to conduct such experiments in humans, biologists can take advantage of “experiments of nature” in which a similar situation has occurred spontaneously. One example is the condition of congenital adrenal hyperplasia. As mentioned earlier in this chapter, girls with CAH are exposed to high levels of testosterone-like hormones (androgens) that are secreted by their adrenal glands during part of their fetal life. Psychologists have found that some, but not all, of the behavioral traits of these girls are shifted in the masculine direction. The girls with CAH engage in more rough-and-tumble play than other girls, for example, and they prefer “boys’ toys” to “girls’ toys” (Figure 4.11). The differences persist into adult life, affecting such things as spatial skills, hobby interests,
and career choices (Berenbaum & Beltz, 2016), as well as sexual orientation (see Chapter 12). These observations indicate that the high androgen levels experienced by female fetuses with CAH influence sex-differentiated characteristics throughout their lives.

But do these results say anything about individuals who don’t have CAH or other medical conditions? To address this question, researchers have estimated testosterone levels in healthy fetuses—by measuring levels of the hormone in the amniotic fluid or in their mothers’ blood (Hines, 2006; Knickmeyer & Baron-Cohen, 2006). The children born of those pregnancies were studied at various ages after birth. It turned out that fetal testosterone levels predicted a variety of gender characteristics in these children, even within a single sex. The lower a girl’s testosterone levels prenatally, for example, the more strongly she would prefer “girls’ toys” over “boys’ toys” when she was 3 years old.

Another way that biologists have approached this question is by looking for anatomical markers that are thought to be influenced by prenatal testosterone exposure. One marker that has attracted a great deal of attention is the ratio of the length of the index finger (second digit, or 2D) to the length of the ring finger (fourth digit, or 4D)—the so-called 2D:4D ratio (Manning et al., 2014) (Figure 4.12). Men typically have a lower 2D:4D ratio than women, and several lines of evidence suggest that this difference is caused in part by the higher testosterone levels that males typically experience during fetal life (Berenbaum et al., 2009; Breedlove, 2010). Researchers have found that the 2D:4D ratio correlates significantly (but not very strongly) with many sex-differentiated characteristics, such as aggressiveness, even within one sex (Hoskins & Ellis, 2014; Turanovic et al., 2017).

These kinds of findings suggest a relationship—presumably a causal one—between the brain’s exposure to androgens before birth and a variety of sexually differentiated characteristics in childhood and adult life. None of the biological findings mean that prenatal hormones determine these characteristics, however. They suggest an influence—an influence that may be quite strong for some characteristics and quite weak, or totally absent, for others. Thus, there is plenty of room for other factors to play a role. These may include nonhormonal biological processes, such as aspects of brain development that are controlled directly by the intrinsic sex of brain cells (Ngun et al., 2011; Bramble et al., 2017), as well as a variety of social and learning factors that we will discuss next.

**Life Experiences Mold Sex Roles**

Newborn girls and boys enter a world that imposes different expectations on girls and boys from the very beginning (Figure 4.13). Psychologists have discerned a variety of ways in which interactions among individuals, their families, and society help create and strengthen **sex roles**—that is, sets of social behaviors that are perceived as appropriate for males or females. Nevertheless, not all children or adults assume sex roles that are in keeping with conventional ideas. The fact that some individuals flout these expectations suggests that there is more to sex roles than social pressure alone.

**Girls and boys are socialized differently**

The earliest social influences on a child come from the family. Parents may influence girls’ and boys’ psychological development by the way they dress them; by the way they decorate their rooms; by the toys they provide (Wong et al., 2013); by the way they attend to, reward, or punish their children’s behavior; and by the activities that they initiate with them. Some parents encourage conventional sex roles,
while others take a more lenient stance. Even if they do not set out to influence a child’s development in this way, parents and siblings may do so simply by virtue of acting as role models.

**OBSERVING SOCIALIZATION**

Here’s just one example of a study in which the influence of family members (older siblings, in this case) on children’s sexually differentiated behavior was demonstrated and measured (Rust et al., 2000). A British group of psychologists examined the behaviors and interests of over 5000 3-year-old children; the researchers reduced the data for each child to a single measure of masculinity/femininity. Some of the children had older siblings. Those who had older siblings of the same sex were more sex-typical in their behavior than were children who had no siblings (singletons) (**Figure 4.14**). Conversely, children who had older siblings of the other sex were less sex-typical than the singletons. These data indicate that the presence of same- or opposite-sex siblings does influence a child’s characteristics to an appreciable degree. The influence was modest in size, however, as can be seen in the figure: A child’s own sex was a much stronger predictor of her or his behavior than was the sex of the older siblings. Girls with older brothers, for example, were far more feminine than any boys, even boys with older sisters.

Parents are presumably in a stronger position than siblings to influence children’s characteristics. This influence is illustrated in a study by researchers at Johns Hopkins University (Pappas et al., 2008). They reported on 40 individuals who, as a result of a variety of intersex conditions, were born with ambiguous genitalia. Although the genitalia of all the children had roughly the same anatomical appearance, those individuals whose parents raised them as boys became increasingly masculine through adolescence and adulthood, whereas those who were raised as girls became increasingly feminine.

**REWARDS AND PUNISHMENTS**

Studies such as the ones just described indicate that social interactions exert an influence but don’t pinpoint the exact mechanisms.

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**FAQ**

Can I raise my child “gender free”?

You can limit your child’s exposure to traditional gender expectations. A few parents have kept their children’s sex secret from the world—a strategy that takes considerable effort and doesn’t have obvious benefits (Ostroff, 2016).

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**Figure 4.13** Babies enter a gendered world.

These children have been dressed in the blue and pink outfits that our culture deems appropriate for infant boys and girls, respectively. (© arek_malang/Shutterstock.com.)
One possible influence is the way family members use rewards, punishments, or withdrawal of rewards with any given child. Under these circumstances, children learn from trial and error, often discovering how their behaviors lead to rewards or avoid punishments. In one study focusing on these learning processes, University of Oregon psychologist Beverly Fagot and her colleagues studied interactions between parents and their 18-month-old infants and then followed the infants for about a year afterward. They found that the infants whose parents reacted to their behavior in the traditional fashion (rewarding or approving of sex-typical behavior and punishing or disapproving of sex-atypical behavior) exhibited more traditionally sex-typical behavior (Fagot et al., 1992). Studies of this kind support the notion that the development of sex-typical traits is influenced by rewards and punishments.

**IMITATION**  Sex-typical behavior is also influenced by a child’s observing and imitating the behavior of parents or older siblings, and not just by reward and punishment (Bussey & Bandura, 1984; Grace et al., 2008). A child might first imitate both parents but be rewarded most for observing and imitating the same-sex parent. In one study, Walter Mischel tracked the eye movements of children while they were watching films featuring male and female characters. In accordance with the theory of observational learning, the children attended more to the same-sex characters in the films than they did to the characters of the other sex. Such behavior could easily lead children to become better acquainted with, and imitate, the behaviors typical of their own sex. And the tendency of children to play with other children of their own sex, mentioned earlier, offers another way in which they can observe and learn sex-typical behavior, this time from their peers (Paechter & Clark, 2007).

The media, particularly television and movies, offer much for children to imitate (Figure 4.15). We already mentioned the “Notel” study in Chapter 1 (see Box 1.2), in which children exposed to television for the first time adopted more stereotypical ideas about male and female sex roles. In more recent studies, a group led by Sarah Coyne of Brigham Young University assessed the exposure of preschool-age girls and boys to Disney Princess and superhero media and toys and then quantified the children’s gender-role characteristics 1 year later (Coyne et al., 2016; Coyne et al., 2017). High exposure to princesses predicted an increase in stereotypically female ideas and behaviors, such as playing “house”—in both girls and boys. Conversely, high exposure to superheroes predicted an increase in stereotypically male ideas and behaviors, such as fighting—again, in both sexes.

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**Figure 4.14  Influence of siblings on gender**  (A) Older siblings act as sex role models. (B) The Pre-School Activities Inventory (PSAI) score is a measure of gender-typical activities and interests in which male-typical traits score higher and female-typical traits score lower. This figure shows the PSAI score for 5542 British 3-year-olds, broken down according to whether they are singletons or have older brothers or sisters. The children’s gender traits are slightly shifted in the direction of the sex of the older sibling. (A © amana images inc./Alamy; B after Rust et al., 2000.)
The language we speak is another cultural influence on psychological development, but one that we’re barely aware of. Children acquire a knowledge of their own sex by 2 to 3 years of age, but this age varies according to the language environment that children are exposed to. Children in Hebrew-speaking households, for example, know their own sex about a year earlier than children in Finnish-speaking households. That’s because Hebrew grammar emphasizes sex: Even the Hebrew word for “you” differs according to whether one is addressing a male or a female. Finnish grammar, on the other hand, doesn’t specify sex at all. English falls in between, and correspondingly, children in English-speaking households learn their sex at an intermediate age (Guiora et al., 1982; Boroditsky, 2011). There have been some efforts to introduce nongendered pronouns in English, such as “zhe” for “he/she”; more commonly, the nongendered plural “they” may be used to replace the gendered singular forms—a convention we sometimes adopt in this textbook.

**Learning from Advice**

Language also facilitates the learning of sex roles by means of verbally communicated rules (Baldwin & Baldwin, 2001). When a boy gets hurt and begins to cry, his older brother or father may state the rule “Big boys don’t cry.” The message is very clear, though the boy may need several months of additional learning before he can control his tears in a broad range of situations. Many girls learn that they are allowed to cry, and they may even get extra attention (a social reward) when they cry. Thus, social advice helps children learn that crying is much more acceptable for females than males. Swearing provides an opposite example: In many households, teenage girls are told more firmly than teenage boys that they should not swear.

Sex role advice is communicated not just by family members but also from many other social sources. As an example, Kathleen Denny, a graduate student in sociology at the University of Maryland, compared the messages conveyed by the U.S. Girl Scouts and Boy Scouts handbooks (Denny, 2011). There were consistent differences. The girls’ book placed more emphasis on group activities, artistic expression, and unstructured inquiry (“Take turns holding different colors up to your face [to decide which colors look best on each of you]”), whereas the boys’ book placed more emphasis on science, learning facts from books, and solo activities (“Draw a floor plan of your home”). The girls’ book encouraged aspiration and effort (“I will do my best to be …”), whereas the boys’ book encouraged self-assuredness (“A Boy Scout is …”). Scouting manuals provide just one example of the countless different messages conveyed to girls and boys, and each individual is influenced by a unique subset of all these types of advice.

Advice-based learning is often backed up by the promise of rewards or the threat of punishments—or reinforced by the social aura of respected role models. The key feature of this form of learning, however, is that advice allows for the acquisition of general concepts that children can apply to a broad range of circumstances, including those that they have not previously encountered. In that way, advice contributes to the creation of durable attitudes and opinions about how girls and boys should behave—viewpoints that may be passed down from generation to generation.

The weight of evidence supports the belief that socialization powerfully influences development. But, as with the biological approach, socialization can’t explain everything. For example, children who will later become gay or transgender adults

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**Figure 4.15  The media influence gender traits.** According to research at Brigham Young University, exposure to Disney Princess-type toys and movies promotes the development of stereotypically feminine ideas and behaviors, while Captain America-type media promote the development of more masculine traits. (Disney and MARVEL STUDIOS/AF archive/Alamy Stock Photo.)
often violate some or most gender norms in rather dramatic ways, yet there is no evidence that these children are encouraged or trained to rebel against these norms. And some children who are born as one sex but reared as the other may fiercely oppose this kind of social reassignment, as if they somehow know which sex they ought to be (Box 4.3). It therefore seems unlikely that a complete account of gender development can be made in terms of either socialization or biology, and in fact few if any present-day workers in the field would make such a claim.

Cognitive developmental models emphasize thought processes

Cognitive psychologists believe that studying development requires getting inside children’s minds. Children actively seek to interpret the social world in which they live, and in the process they gradually develop a sense of themselves as girls or boys (Martin & Ruble, 2010).

One example of a cognitive developmental model is the sexual script theory of John Gagnon and William Simon (Simon & Gagnon, 1986). As the word “script” suggests, this theory asserts that sexual behavior is a form of role-playing, influenced by scripts that we have learned. People are especially reliant on sexual scripts when interacting with prospective partners that they don’t know very well. As we’ll describe in more detail in Chapter 7, first encounters between heterosexual men and women have traditionally been organized according to scripts governing such matters as what it means to invite someone out for a drink, who pays, and how the man and woman negotiate any sexual interactions.

Scripts can change over time under the influence of culture. Early in the 20th century, for example, oral-genital contact was a form of sex that men largely received from prostitutes and in transient relationships. Now, however, it has become a common and acceptable sexual practice between young adults who are hooking up or dating, and both males and females give oral sex to their partners (Reece et al., 2010; Wright, 2011). Thus, men and women today follow different scripts about oral sex than their grandparents did.

Scripts, according to Gagnon and Simon, influence not only sexual dealings among people, but also the psychosexual development of individuals. They noted that postpubertal boys masturbate a great deal more than do girls, as we mentioned above, whereas girls’ early sexual experiences tend to be with partners. As a consequence, script theory suggests, the meaning of sex for males becomes embedded in the notion of the male’s own sexual pleasure, whereas for females it becomes embedded in the notion of relationships.

Sexual scripts are relevant to important social issues such as sexual coercion and pornography. In one longitudinal study of high school students, for example, male students who endorsed a script in which men were expected to take sexual risks were more likely to engage in aggressive sexual behavior (Krahe et al., 2007). Another study found a significant correlation between respondents’ pornography use and their engagement in aggressive or degrading behaviors with their sex partners, as if they were enacting scripts learned from pornography (Bridges et al., 2016).

Transgender People Challenge Society’s Deepest Division

The term transgender, often shortened to trans, is used in a broad and rather ill-defined way to encompass all individuals whose gender identity does not fully correspond with their natal sex. These individuals may identify fully with the other sex, or they may reject a simple male/female dichotomy. Transgender is sometimes contrasted with cisgender, which refers to the conventionally gendered majority of women and men. About 0.5% to 0.6% of Americans identify as transgender; the
The Boy Who Was Raised as a Girl

Bruce and Brian Reimer were monozygotic (“identical”) twins born in Winnipeg, Canada, in 1965. When the twins were 7 months old, they developed phimosis, a common condition in which the foreskin of the penis becomes constricted (see Chapter 3). The parents were advised to have the twins circumcised, but during Bruce’s operation, an accident led to the complete destruction of his penis.

The parents were understandably devastated and at a loss as to what to do. Eventually they brought Bruce to sexologist John Money at the Johns Hopkins School of Medicine. Money believed that children developed a male or female gender identity according to whether they were reared as girls or boys. Since it would not be possible to refashion a normal penis, Money recommended that Bruce be surgically transformed into, and reared as, a girl. Money told the parents that as long as they treated the child as a girl, she would become a feminine, heterosexual woman.

The parents followed Money’s advice. They immediately changed Bruce’s name to Brenda and dressed and treated her as a girl. When Brenda was 2 years old, her sex-reassignment surgery was completed: Her testicles were removed, and a rudimentary vagina was constructed from the scrotal skin. Her parents dedicated themselves to rearing Brenda and Brian as sister and brother. Money saw the parents and the twins from time to time and advised the parents on the appropriate ways to treat Brenda that would best encourage her femininity.

As the years went by, Money reported in detail on the case in lectures, papers, and books. He claimed that Brenda was developing as a normal girl, apart from a certain tomboyishness. While Brian copied his father, Brenda copied her mother, wrote Money (and colleague Anke Ehrhardt) in a 1971 book (Money & Ehrhardt, 1971): “Regarding domestic activities, such as work in the kitchen and house traditionally seen as part of the female’s role, the mother reported that her daughter copies her in trying to help her tidying and cleaning up the kitchen, while the boy could not care less about it.” Brenda chose dolls as presents, while Brian chose model cars. The case became widely cited, both in the popular press and in academic circles, as evidence for the malleability of gender.

Eventually, Money reported that he had lost contact with the Reimer family. It took detective work by University of Hawaii sexologist Milton Diamond (Diamond & Sigmundson, 1997), and later by journalist John Colapinto (Colapinto, 2000), to discover what had happened to Brenda. It seems that she was never successfully socialized into a feminine gender identity in the way that Money had claimed. Rather, she rebelled against it at every stage. Although a female puberty was induced by means of treatment with estrogen, Brenda loathed her developing breasts. By the age of 15 she had changed her name to David and was dressing as a boy. David had a double mastectomy, testosterone treatments, and a phalloplasty (reconstruction of a penis). He was always sexually attracted to women, and he eventually married, engaged in coitus with the aid of a prosthesis, and adopted children.

Sadly, David killed himself in 2004 at the age of 38. The exact reason for his suicide is not known, but possible causes include the breakup of his marriage, financial difficulties, the earlier death of his twin brother Brian, and of course his traumatic childhood (Chalmers, 2004).

The case of Bruce, then Brenda, then David Reimer suggests a conclusion different from the one drawn by John Money: Prenatal development seems to strongly influence gender identity and sexual orientation even when rearing conditions, genital anatomy, and pubertal hormones all conspire to produce the opposite result. This conclusion has been reinforced by the study of genetically male children with a condition in which the external genitalia fail to develop. Although surgically reconstructed as girls and reared as such, all are male-shifted in their gender characteristics, and nearly half of them insist they are boys or men (Reiner, 2004). “It’s been a monstrous failure, this idea that you can convert a child’s sex by making over the genitals in the sex you’ve chosen,” said the author of that study. “If we as physicians or scientists want to know about a person’s sexual identity, we have to ask them” (Dreifus, 2005).
percentages are slightly higher among younger than older age groups and among nonwhite than white Americans (Crissman et al., 2017; Flores et al., 2017).

Being transgender is primarily an inner state—a person’s own sense of who they are. Whether transgender individuals express that identity in their social behaviors—in atypical sex roles—depends in part on external factors. That is especially true during childhood: Children who would like to behave like the other sex—by their choice of clothing or pastimes, for example—may be prevented from doing so by their parents or by the need to avoid harassment at school.

The term **transexual** is generally used for the minority of transgender individuals who seek to change their bodies into those of the other sex by medical means. This transition may be in either direction. Persons who transition from male to female are referred to as transexual women or trans women, while those who transition from female to male are referred to as transexual men or trans men. In other words, the gendered terms “man” and “woman” refer to the sex the person identifies as or wants to become, not the anatomical sex in which they were born.

Some people who are transexual by our definition prefer to use the term “transgender.” Some people who have fully transitioned no longer identify as transgender. Transgender and transexual people have existed in most—perhaps all—human societies (Box 4.4). We focus first on transexual men and women, and then take a look at the broader population of transgender people.

**Transexual individuals are of more than one kind**

Imagine yourself waking up one morning in a body of the other sex. Very likely you would be shocked and would move heaven and earth to get back into your “right” body. That is the kind of mental experience transexual people deal with on a daily basis, unless and until they undergo a medical and social transition to the other sex. The unhappiness caused by discordance between a person’s anatomical sex at birth (natal sex) and their gender identity is called **gender dysphoria**. This is a diagnostic category in the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*, but it could also be viewed as a mentally healthy reaction to the difficult situation in which transexual individuals find themselves.

Most transexual men have a characteristic life history. From early childhood they may say they are boys or insist that they want to become boys, and they try to express their masculine identity in their clothing, hairstyles, friendships, activities, and career plans. This often puts them on a collision course with the expectations of family, peers, and the world at large. As they enter puberty, they resent the developing signs of womanhood and may seek to hide them by, for example, binding their breasts. In adulthood they seem quite masculine in many respects, and they are usually sexually attracted to women, but they do not identify as homosexual or lesbian. Rather, they identify as heterosexual men. The well-known expression “man trapped in a woman’s body” describes them fairly aptly. They generally seek to transition as early as possible.

Transexual women, on the other hand, fall into two contrasting types with different life histories. The first type, who we may call “classical” transexual women, are pretty much the converse of the transexual men just described. As children they say that they are girls or insist that they want to become girls, and they try to dress as girls and to play with girls. They dislike the man’s body that puberty gives them, and they often try to dress and act in such a way as to allow others to accept them as women. Typically feminine mannerisms, gait, and conversational style seem to come naturally to them. They are usually sexually attracted to men, but they identify as heterosexual women, not as gay men. They could be thought of as “women trapped in men’s bodies.” Transexual women of this type often seek to transition medically and socially in their teen years or young adulthood—as soon as they are legally allowed to do so or as soon as they can raise the money to pay for the necessary treatment.

**transexual (or transsexual)**

A person who identifies with the other sex and who seeks to transition to the other sex by medical means.

**gender dysphoria**

The unhappiness caused by discordance between a person’s anatomical sex and gender identity.
Trans Men and Women in Cross-Cultural Perspective

Transgender men and women have probably existed in all human societies. In many societies, they have been given special names and accorded special status—often, a spiritual or sacred one. Throughout Polynesia, for example, there existed a class of transgender individuals known as mahus. These were natal males who dressed in female (or a mixture of female and male) attire, engaged in women’s activities, and had sex with conventional men. Mahus were attached to the village headman’s household and performed sacred dances. They were traditionally accorded high status, and families encouraged or even trained one of their sons to become a mahu. From time to time, a European explorer or trader took a fancy to a mahu and brought her to his ship for sex, only to be shocked by the discovery of her male anatomy.

There still exists a comparable group of trans women in northern India and Pakistan. Known as hijras, they cut off their genitals and work as religious dancers or as prostitutes serving men. Thailand has an especially large and visible community of trans women, who are known as kathoey (see figure). Some have undergone sex reassignment. Kathoey are well accepted in the entertainment field and in some jobs typically held by women, but they face discrimination in “male” occupations.

In several native cultures of North America, rituals conducted at or before puberty gave a boy the option to choose between the status of a conventional male and that of a two-spirit (male-female) person, or berdache (Williams, 1986). Among the Tohono O’odham of the Sonoran Desert, for example, a boy who preferred female pursuits was tested by being placed within a brushwood enclosure, along with a man’s bow and arrows and a woman’s basket. The enclosure was then set on fire. If, in escaping the flames, the boy took with him the bow and arrows, he became a conventional man, but if he took the basket, he became a berdache. The berdaches wore special clothes fashioned from male and female attire, practiced mostly female occupations, and engaged in sexual relationships with conventional men. They were often shamans (healers who derived their curative powers from their knowledge of the spirit world), chanters, dancers, or mediators.

Trans men have also been described in many societies. According to legend, anatomically female warriors known as Amazons battled the Greeks during the Trojan War. Since then, the word “amazon” has been used in reference to fierce or powerful females. In the 16th century an explorer described anatomical females who adopted a male warrior role among the Tupinamba Indians of northeastern Brazil (de Magalhaes, 1576/1922):

There are some Indian women who determine to remain chaste: they have no commerce with men in any manner, nor would they consent to it even if refusal meant death. They give up all the duties of women and imitate men, and follow men's pursuits as if they were not women. They wear the hair cut in the same way as the men, and go to war with bows and arrows and pursue game, always in company with men; each has a woman to serve her, to whom she says she is married, and they treat each other and speak with each other as man and wife.

The Amazon River was named after these trans men.

Westernization has led to considerable suffering for transgender persons in traditional societies. Under British influence, the once-honored hijras of India came to be despised. Spanish conquistadores killed many of the trans people they encountered in Central America. In Colorado in 2001, a self-described two-spirit Navajo youth, Fred Martinez, Jr., was beaten to death by an 18-year-old white man, who boasted to friends that he had “beat up a fag” (Quittner, 2001).

Mahu A man who took a female sex role in Polynesian society and performed ritual dances.

Hijra A member of a class of male-to-female transexuals in northern India and Pakistan.

Kathoey Trans women in Thailand.

Two-spirit person In Native American cultures, a person with the spirit of both a man and a woman; a transgender person. Also called berdache.
Another type of trans woman, however, is much less well known to the general public. During childhood, these children do not claim to be girls, and they are only mildly gender-nonconformist, or not at all. When they grow up, they are usually sexually attracted to women, so they are heterosexual with respect to their natal sex. However, their interest in women takes an unusual course. In particular, they are erotically aroused by wearing women’s clothes—a trait known as heterosexual transvestism. Eventually, this kind of ideation may progress to the point that they are aroused by the idea, not merely of being in women’s clothes, but of being in a woman’s body and possessing female genitals. In other words, their desire to become a woman is fueled by the sex drive and by the desire to incorporate the object of their attractions into themselves, rather than by having a female gender identity. Feminine mannerisms, gait, and conversational style do not necessarily come naturally to these transexual women, and so they may take lessons on how to act like a woman. They tend to seek medical transition later in life, often after they have been heterosexually married and fathered children.

A Canadian sexologist, Ray Blanchard, gave this second developmental pathway the name autogynephilia, meaning “being attracted to oneself as a woman” (Blanchard, 2005). Some sex researchers believe that most male-to-female transexuals who are sexually attracted to women are autogynephilic (Bailey, 2003). Others don’t find a close correlation between a trans woman’s sexual orientation and whether or not she displays characteristics of autogynephilia (Veale et al., 2008).

Among transexual women themselves, some have embraced the concept of autogynephilia and added important details to its theoretical underpinnings. Anne Lawrence, for example, who is a sexologist and self-identified autogynephilic transsexual woman, has collected autobiographic narratives by over 200 women like herself (Lawrence, 2013). These narratives are generally consistent with the life history of autogynephilic transexual women described above. Some other transexual women, however, have strongly opposed the concept of autogynephilia, in part because they perceive it as equating autogynephilia with a mental disorder or delusion (James, 2004; Jones, 2016). Yet neither autogynephilia nor heterosexual transvestism is described as a disorder by Blanchard or Bailey, nor is it defined as such in the DSM-5.

The cause or causes of transexuality are not well understood. Because, as discussed earlier, sexually differentiated traits are influenced by biological factors such as prenatal hormones, many researchers suspect that such factors also lie behind transexuality. Consistent with this idea, there have been reports of differences in genes (Hare et al., 2009), brain structure (Garcia-Falgueras & Swaab, 2008; Rametti et al., 2011a; Rametti et al., 2011b), and finger length ratios (Schneider et al., 2006) between trans- and cisgender individuals of the same natal sex. Twin studies also suggest that genes influence transexuality (Segal, 2000; Diamond, 2013), although not all monozygotic twins (who possess the same genes) have the same gender identity (Figure 4.16). But the comparative rarity of transexual individuals, their complex life histories, and the autogynephilic/non-autogynephilic distinction all complicate the search for a biological explanation for transexuality.

**Figure 4.16** Jonas and Nicole Maines are monozygotic (“identical”) twins. Both were born male, but Nicole transitioned to female as a teenager. (© Robert F. Bukaty/AP/Corbis.)

Changing sex is a multistage process

No form of psychiatric treatment can bring a transexual person’s gender identity into concordance with his or her natal sex. In fact, any attempt to do so would be experienced as a violation of personhood. Therefore, doctors and therapists have followed a different strategy—helping transexual people to achieve their dream of changing their anatomical

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**transvestism** Wearing clothes of the other sex for purposes of sexual arousal.

**autogynephilia** A form of male-to-female transexuality characterized by a man’s sexual arousal at the thought of being or becoming a woman.
Contrary to what many people believe, transitioning is not a single event that takes place on a particular day under a surgeon's knife. It is an extended process that has both medical and social aspects, and there are several different ways in which the process may go forward. Four major elements are as follows, according to WPATH (World Professional Association for Transgender Health, 2017):

- **Assessment, education, and psychotherapy.** Professionals with expertise in the area of transgender health will ask about the clients' life histories, discuss their goals, and educate them about the process and the limitations and risks of transitioning. Many clients can benefit from psychotherapy to help them deal with conflicts, depression, and other issues that may have made their lives difficult. The clients' families, who are sometimes in turmoil themselves, may be included in the process.

- **Hormonal treatment.** For individuals transitioning from natal male to female, some form of estrogen is prescribed. An androgen-blocking drug is often added; this allows the dose of estrogen to be lower than would be necessary otherwise. Individuals transitioning from natal female to male are given testosterone or a related androgen, and progesterone may be added to stop menstruation. The hormones cause a variety of anatomical and physiological changes, as indicated in Figure 4.18, but stature and skeletal structure are not affected. Testosterone does not eliminate female breasts. Estrogen thins but does not eliminate the male beard, and it does not reverse male-pattern baldness. The hormonally induced changes may take months to show themselves.

- **Experience in the desired sex role.** WPATH recommends that transitioning clients spend at least a year living in the community in the sex role corresponding to their desired sex, while being monitored and counseled by an experienced therapist. During this time, as well as later, the client may choose to have training in such matters as voice, language, gait, mannerisms, and so on. This phase of the transition may be undertaken before or after the initiation of hormonal treatment.

- **Sex-reassignment surgery, also called gender confirmation surgery.** For natal males, the key procedures are removal of the penis and testicles; construction of a vagina, labia, and clitoris (Figure 4.19); and augmentation of the breasts. The vagina may be constructed from the inverted skin of the penis or a graft of intestinal tissue. Recently, tissue engineers have succeeded in constructing vaginas in the laboratory, using cells from the intended recipient; so far, these have been implanted only into girls who were born without vaginas (Raya-Rivera et al., 2014), but the technology might be used in sex-reassignment surgery in the future. Other procedures that may be performed include surgery on the vocal cords (to raise the pitch of the voice), liposuction to the waist, reduction of the Adam's apple, and various procedures to feminize the appearance of the face.

- **For natal females, surgery can include removal of the breasts, ovaries, oviducts, uterus, and vagina. In addition, a scrotum and penis may be
constructed (i.e., scrotoplasty and phalloplasty). Construction of a penis that looks natural, contains a functioning urethra, and is capable of erection (with the aid of a pump-and-reservoir system or some kind of stiffening device; see Chapter 14) is a very costly multistage process, and the results are far from ideal (Morrison et al., 2017). Frequently, the new urethra develops narrowings (strictures) or unwanted openings to the outside (fistulas), which necessitate further surgery. Urinary tract infections can occur. Furthermore, there is major scarring in the body region that is used as the source of graft tissue. Because of the expense and the imperfect results, many transexual men forgo a phalloplasty. In some clients, the clitoris can be enlarged by hormonal treatment and surgery. This procedure is called metoidioplasty (Figure 4.20) (Perovic & Djordjevic, 2003). The resulting small penis is not generally usable for coitus, but it may be capable of erection and orgasm, and the procedure may also be psychologically and socially beneficial in confirming a male identity. Even with this simpler procedure, however, complications requiring further surgery are very common (Hage & van Turnhout, 2006).

People who have transitioned from one sex to the other have to make many practical decisions (e.g., whether to be open about the sex change or to conceal their past), and they face all kinds of personal and social challenges. Even getting

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Figure 4.18 Effects of cross-sex hormones on female and male bodies. These hormones do not change stature or skeletal structure. Estrogen does not eliminate facial hair or reverse male-pattern baldness in natal males.

Figure 4.19 The vulva after sex-reassignment surgery The clitoris is constructed from the top surface of the penis with its nerve supply intact and may therefore be capable of triggering orgasm. The clitoris and adjacent labial tissue are covered with mucosa derived from the penile urethra, giving them a pink color. The remainder of the penile skin, including the glans, is inverted to form the vagina. Often, additional skin must be grafted from other areas to make the vagina deep enough for coitus. (Courtesy of Eugene A. Schrang, M.D.)
an amended birth certificate may be a struggle. Establishing sexual and affectional relationships is often difficult. Many organizations provide personal, legal, and political support for transexual and transgender people (see Web Resources at the end of this chapter), and professional help is available in such matters as voice training. (Audio clips illustrating the changes in voice quality that can be achieved with training are available online (Saint Louis, 2017).

Not all transexual people who wish to change sex do so via the officially recommended route just described, which they may view as unduly restrictive. Also, the WPATH guidelines assume that the desired end point is a body as similar to the “other” sex as possible, but not every transexual person wants exactly that. Some therefore pursue another strategy: They learn about transitioning through the internet or peer networks, obtain hormones through irregular channels, and when they feel they are ready for surgery, go straight to a private surgeon—perhaps in a foreign country such as Thailand, where costs are lower.

Of course, such self-guided treatment carries significant risks. Without psychological counseling, individuals may be left in unnecessary distress, or they may take steps that they later regret. What’s more, sex hormones can have serious ill effects of which the person has not been forewarned. Estrogen can cause potentially fatal blood clots, for example, and if a natal female who is taking testosterone becomes pregnant, her fetus may be severely affected.

The long-term outcome of sex-reassignment surgery is fairly good, with the majority of individuals reporting satisfaction with the procedures, relief from gender dysphoria, and an improved quality of life (Murad et al., 2010). Some studies have reported that a significant proportion of people who have transitioned are depressed or regret having undergone the transition, and suicides and psychiatric hospitalizations are far more common among postoperative transexual men and women than among the general population (Dhejne et al., 2011). Some of these individuals seek medical assistance in reversing their transition (“detransitioning”). Still, it is not clear that these people would have fared any better if they had been denied medical and surgical treatments. Better preoperative counseling and postoperative support would likely improve the outcomes for all individuals who choose to transition.

Some centers are now treating children who want to transition at or shortly before puberty. Often these children are treated with a drug, leuprolide (Lupron), that blocks the onset of puberty; this prevents the appearance of difficult-to-reverse secondary sexual characteristics such as beards, and it gives the children time to make a more mature decision about whether to transition. Treatment with puberty blockers can have ill effects, however, such as a loss of bone density.

In this connection it should be noted that most highly gender-nonconformist children—those who say they are, or want to become, members of the other sex—abandon these ideas at some point, usually around the time of puberty (Green, 1987; Drummond et al., 2008; Wallien & Cohen-Kettenis, 2008). They may well become gay or lesbian adults, but the majority become satisfied with their natal sex and no longer desire to transition. It has not so far proved possible to distinguish these “desisters” from the minority of gender-nonconformist children who “persist” and become transexual adults. There is therefore some question as to whether treating trans children with puberty blockers does more harm than good (Giovanardi, 2017).

Many transgender people do not want surgery

Transexuality as defined above forms just the visible tip of an iceberg of transgender identity: Much larger numbers of transgender women and men do not fully identify
with their birth sex but do not seek a medical transition to the other sex. They may not see any contradiction between living as a woman while possessing the genitals of a man, or vice versa. They may not have the money, they may be put off by the less than ideal results, or they may be perfectly happy with simply assuming the role of the other sex. This choice also gives them the option of switching between male and female roles, or adopting an identity that defies the stereotypes for both male and female roles. They may enjoy being recognized as a “gender outlaw” or “genderqueer” rather than trying to deceive everyone. They may position themselves as “beyond the binary” of the two sexes. A few individuals describe themselves as “agender,” meaning that no label relating to gender identity applies to them. In 2017 one such person, a natal male 27-year-old from Portland, Oregon, was granted legal certification as agender—a first in the United States (O’Hara, 2017). And some young people, inspired by celebrities such as Miley Cyrus, may reject gender labels because they reject all labels.

The traditional view of transexuality is medical: Transexual people have a “disorder” that needs to be “treated” in order to make them “well.” Most transexual people accept this medical model, if somewhat reluctantly, because it’s a precondition for getting any kind of financial coverage and other accommodations relating to their medical transition. But among trans men and women who don’t want sex-reassignment surgery, many see the medical model as outdated and even demeaning. They may believe that it is society that has a “problem” with gender-variant people, and it is society that needs to be “treated.”

Certainly, many Americans have an aversion to transgender people, who are victimized by abuse and hate crimes at a much higher rate than are lesbians and gay men. Could it be that the desire to change one’s genital anatomy represents the internalization of these hostile attitudes? Kate Bornstein (Figure 4.21), a gender theorist who has herself transitioned from male to female, put it this way:

*People think that they have to hate their genitals in order to be transsexual. Well, some transsexuals do hate their genitals, and they act to change them. But I think that transsexuals do not “naturally” hate their birth-given genitals—I’ve not seen any evidence of that. We don’t hate any part of our bodies that we weren’t taught to hate. We’re taught to hate parts of our bodies that aren’t “natural”—like a penis on a woman or a vagina on a man.* (Bornstein, 1994)

To some extent Bornstein’s point of view is supported by anthropological research. In the native culture of Samoa, for example, transgender persons (called fa‘afafine) rarely desire sex reassignment, because it is socially acceptable to possess a penis and yet live in a sex role that is not male (Vasey & Bartlett, 2007).

This is how one 18-year-old trans man, who had a mastectomy but no genital surgery, put it: “Some transmen want to be seen as men—they want to be accepted as born men. I want to be accepted as a transman—my brain is not gendered. There’s this crazy gender binary that’s built into all of life, that there are just two genders that are acceptable. I don’t want to have to fit into that” (Quart, 2008).

Trans people struggle for awareness and acceptance

Transgender adults have had a difficult struggle to gain recognition as a group distinct from lesbians and gay men. Of course, the introduction of sex-reassignment surgery in the 1960s, with all the attendant publicity, did educate the public about the phenomenon of transexuality, but it also prompted most people to accept the medical
model of transexuality, which, according to some gender theorists, was an attempt to erase trans people by hiding them in their newly assigned sex (Bettcher, 2014).

One factor that has hampered the advancement of trans people is that they are relatively few in number. Thus, their political activism has generally taken place under the umbrella of the much larger gay rights movement. In fact, transgender persons participated in the “Stonewall Rebellion”—the 1969 riot in New York that was a key event in the modern gay rights movement (see Chapter 12).

Still, like bisexuals, trans people have fought to clarify their separate identity. In gay rights and gay pride marches and parades, trans people form their own contingents, and these events now usually carry names such as “March for Lesbian, Gay, Bisexual, and Transgender Equality.” Transgender role models are beginning to appear, such as Victoria Kolakowski of California, who was elected as the nation’s first transgender trial judge in 2010 (Sheridan, 2010). In academe, transgender professors, such as neuroscientist Ben Barres of Stanford University, offer role models for trans students.

Legal protections for transgender people lag behind those for gays and lesbians, even though the transgender population is at greater risk of violence and discrimination, which are manifestations of transphobia. Only 16 states have hate crime laws that cover transgender identity, and some states have attempted to roll back legal protections that were enacted earlier (Box 4.5).

Twenty to thirty killings of trans people—mostly trans women—occur every year (Human Rights Campaign, 2017). The murder of a trans teenager, Gwen Araujo, in California in 2002 received enormous publicity and helped trigger political activism by trans people and their allies (Figure 4.22).

In 2009 the federal Hate Crimes Prevention Act authorized federal prosecution of hate crimes based on gender identity, wherever they may occur. The first person to be convicted of murder under this statute was Joshua Vallum, a member of a Mississippi street gang. In 2015 he beat his ex-girlfriend Mercedes Williamson to death with a hammer after his friends discovered that she was trans. In 2017 Vallum received a 49-year prison sentence (Stack, 2017).

Growing up trans can be a very stressful experience, especially when there is a lack of family or community support. Trans youth are exposed to many different forms of victimization, ranging from microaggressions from peers to outright

**Figure 4.22 Transphobic violence** 17-year-old Gwen Araujo of Newark, California (A), was beaten to death by four men who realized that she was anatomically male after two of them had sex with her. All four of the men, three of whom are shown in (B), were convicted of murder or manslaughter and sentenced to prison terms ranging from six years to life (Fraley, 2016). (Associated Press.)

transphobia  Hatred of transgender people.
In February 2016 the city council of Charlotte, North Carolina, passed an ordinance banning discrimination against LGBT people in public accommodations (facilities or businesses that offer services to the public). The North Carolina state legislature reacted by passing the Private Facilities Privacy and Security Act, more commonly known as House Bill 2 or HB2. This bill nullified all LGBT nondiscrimination ordinances such as Charlotte’s. It also stated that people must use restrooms corresponding to their sex as indicated on their birth certificates. Governor Pat McCrory, a Republican, signed the bill into law.

The passage of HB2 triggered a deluge of litigation. The U.S. Department of Justice, as well as the ACLU, sued the State of North Carolina, asserting that HB2 discriminated on the basis of sex, sexual orientation, or gender identity. The State of North Carolina, as well as the Christian conservative group Alliance Defending Freedom, sued the United States, claiming that the U.S. action was itself discriminatory. A district court issued an injunction blocking the restroom provisions of HB2 while litigation proceeded. Numerous corporations, sports groups, and individuals denounced HB2, and the state stood to lose nearly 4 billion dollars as a result of canceled business investments, conventions, and sports events.

The situation changed in the fall of 2016, when Governor McCrory was narrowly defeated by Democrat Roy Cooper. Cooper, in his previous role as state attorney general, had opposed HB2. The legislature, under economic pressure from the boycotts, passed a repeal of the law in early 2017. Cooper signed the repeal, declaring, “House Bill 2 has been a dark cloud hanging over our great state. It has stained our reputation. It has discriminated against our people and it has caused great economic harm in many of our communities.” Nevertheless, cities within the state remained free to pass bathroom ordinances of their own choosing.

North Carolina is just one of several states that have seen controversies on the same topic. The bathroom debate pits LGBT people, and progressives generally, against religious conservatives and other traditionally minded people. Yet there are also those who say they support HB2 from a purely feminist perspective. One such person is Maya Dillard Smith, formerly director of ACLU’s Georgia chapter. Smith resigned that position in 2016, asserting that the ACLU was paying too little attention to the rights of cisgender (conventionally gendered) women. These women, she said, would be traumatized and put at risk by the presence in women’s bathrooms of persons she referred to as “men”—that is, trans women who had not undergone sex-reassignment surgery.

Which side do you take? Do you think the problem could or should be sidestepped by, for example, redesigning or reallocating public toilets? Would it be a fair solution to have trans individuals use specially assigned single-use toilets? Should all toilets, whether single- or multiple-use, be gender neutral? And is the bathroom debate really about bathrooms, or is it a skirmish in a bigger battle—about what?


Violence in the streets (Sterzing et al., 2017). Attempted and completed suicides are common. A tragic example occurred in late 2014 when 17-year-old Leelah Alcorn of Ohio threw herself under a truck; in a note she blamed her death in part on her parents’ refusal to accept her trans identity. Even so, recent years have seen a great increase in public interest in, and support for, trans people, and there is reason to expect that their lives will become far more rewarding in the future—both to themselves and to the communities with whom they share their lives.
Male and female brains differ in structure, chemistry, and function. Some sexual differentiations of the brain occur prenatally—high levels of androgens drive male-typical brain development, and low levels permit female-typical development. At puberty and thereafter, estrogens become important in establishing and maintaining female-typical body structure and function and also influence the brain.

Examples of atypical sex development include chromosomal anomalies such as Klinefelter syndrome (XXY or XXXY) and Turner syndrome (XO), as well as genetic conditions that affect sex hormone production (e.g., congenital adrenal hyperplasia) or the body’s sensitivity to sex hormones (e.g., androgen insensitivity syndrome). The proper treatment of children with ambiguous genitalia is a subject of controversy.

Many psychological characteristics differ to a greater or lesser extent between females and males. Gender identity is a person’s core sense of being a female, a male, or some combination of the two. Sex roles are the sets of behaviors that represent a person as male, female, or non-binary.

On average, women outperform men in fine movements, verbal fluency, and some aspects of memory. Men outperform women in some cognitive traits, such as visuospatial skills. Personality differences include greater aggressiveness in men.

In the area of sexuality, men and women differ in the strength of sex drive, interest in casual sex, interest in visual sexual stimuli, styles of jealousy, sexual orientation, interest in unusual forms of sexual expression, likelihood of engaging in coercive sex, sexual risk taking, willingness to pay for sex, frequency of masturbation, sexual response cycles, and the duration of reproductive capacity over the life span. Most psychological sex differences show considerable overlap between the sexes, and their significance is debated.

Many psychological sex differences arise early in life. Boys are typically more active and aggressive; girls are more interested in socializing. Boys and girls tend to prefer different toys and both prefer to associate with children of their own sex. Sex-specific interaction styles develop within these same-sex groups. Differences in other cognitive traits emerge gradually during childhood.

Biological factors help create sex differences. These include genes that have evolved to help men and women improve their reproductive success. A role for sex hormones, especially during prenatal life, is illustrated by experiments on animals, by observation of humans affected by endocrinological disorders, and by the study of anatomical markers (such as finger length ratios) that are correlated with gender traits.

Socialization influences sex differences. This can happen through the innumerable rewards and punishments that children receive from parents and others. Imitation is also an important influence on sex roles.

Several cognitive developmental models stress the importance of children’s thought processes in the development of gender identity. In sexual script theory, the learning of sex roles involves the social negotiation of roles, such as those to be played by the man and woman in heterosexual relationships.

Transgender people are those whose gender identity does not fully correspond to their natal sex. Transsexuals are transgender people who seek to change their anatomical sex: They may transition from male to female (transsexual women) or from female to male (transsexual men).
Summary (continued)

The change may involve hormone treatment and sex-reassignment (gender confirmation) surgery, or just hormone treatment. All transsexual women and some transsexual men have a childhood history of strong gender nonconformity. They dislike the bodily changes induced by puberty and may attempt to conceal them. They usually do not identify as gay, however, but rather as heterosexual individuals of the sex with which they identify. Some transsexual women are sexually attracted to women: Some or most of these individuals have a different developmental history, in which their desire to change sex develops out of a wish to incorporate the sex characteristics of their preferred sexual partners (women) into their own bodies (autogynephilia).

- Transitioning is a multistage process. It includes assessment and psychotherapy, living for some period in the identity of the other sex, hormonal treatments, and often, sex-reassignment surgery. Genitals can be transformed into those of the other sex, but the procedure is expensive and, particularly in the case of female-to-male reassignment, yields imperfect results. Not all people who transition undergo genital surgery. Many transsexual women and men are satisfied with the results of sex reassignment and are able to surmount the social and sexual challenges of post-transition life.

- Many transgender people do not seek sex reassignment, for a variety of reasons. They may not fully identify with either sex. Some believe that sex reassignment would be unnecessary if society could be persuaded to abandon its obsession with the binary nature of gender. All transgender people face the possibility of discrimination and victimization, and many states fail to offer them specific protections.

Discussion Questions

1. Imagine that you have just become the proud parent of a newborn baby, but the nurse-midwife or pediatrician tells you that the baby has sexually ambiguous genitalia. Do you think this child would be stigmatized and disadvantaged? How? Consider what you would do and why.

2. If you or your partner was pregnant and learned that you would have a baby with Turner or Klinefelter syndrome, what would you decide to do about it, and why? What would be the likely impacts of such a syndrome on your child’s life?

3. Do you think that this chapter presents a balanced account of psychological differences between the sexes, and of research into the origins of these differences? If not, why not? Did anything you read surprise you or cause you to reconsider your beliefs in this area?

4. How would you react if your young daughter insisted she was a boy and asked to go to school in boys’ clothes? Would you mention the possibility that she might eventually be helped to change sex? Would you stress the likelihood that she would eventually accept a female identity?

Web Resources

- Accord Alliance (group concerned with disorders of sex development/intersexuality)  www.accordalliance.org
- Androgen Insensitivity Syndrome Support Group  www.aissg.org
- CARES Foundation (congenital adrenal hyperplasia education and support)  www.caresfoundation.org
- gender Inn (bibliographic source for books, articles, and websites concerning gender)  tinyurl.com/y73pk25
- GLAAD. Transgender Resources  tinyurl.com/jwsjj55
InterACT (advocates for intersex youth)  www.interactadvocates.org
Intersex Society of North America. Bodies Like Ours (support and information for people with atypical genitals)  http://www.isna.org/node/522
Klinefelter Syndrome Information and Support  www.klinefeltersyndrome.org
National Center for Transgender Equality  www.transequality.org
National Public Radio: Two families grapple with sons’ gender identity (radio program that describes two opposing therapeutic strategies for helping gender dysphoric children)  tinyurl.com/lxvdc5a
Turner Syndrome Society of the United States  www.turnersyndrome.org
World Professional Association for Transgender Health  www.wpath.org

Recommended Reading