

Chapter 6

Sexuality Development and Developmental Psychology

While most humans appear to invoke free will regarding their sexual behavior, their sexuality in turn often seems to subvert a great deal of this will. That is, our sexual desires, inclinations, and identity greatly influence our decisions and behavior. People tacitly accept this principle when they advocate imprisonment for individuals who commit sex crimes against children. Implicit in this involuntary commitment process is the premise that the offender will not be able to control himself or herself against committing future offenses and thus should be physically prevented from doing so. This generally accepted act of prevention applies to the most extreme and dangerous sexual behaviors. But is the violent pedophile really less in control of his sexual behavior than those individuals who exhibit socially acceptable forms of sexuality? Or, is it that most of the population enacts a sexuality that is no more under control but considered a normative part of both nature and society? In essence, the issue is—regardless of the sexual behavior that an individual engages in—whether he or she is ultimately in control of that behavior.

Wine connoisseurs often encourage the uninitiated to educate their palates to better appreciate fine wines. In doing so, they are encouraging people to suppress their innate aversion to what is essentially rancid grape juice with a bit of alcohol. With repeated exposure to the initially repellent properties of the wine, and with the guidance of an expert identifying specific hedonic properties, an individual can come to identify what is deemed to be a desirable wine. This analogy draws a comparison with normative aspects of sexuality, which are both learned and reinforced, especially in childhood. It also introduces the conflict that many people

experience when codified sexuality contrasts with an individual's personal desires and behaviors.

While social indoctrination may influence an individual's sexuality, this aspect of human behavior tends to be remarkably resistant to external influences. In other words, if one is attracted to males, this attraction will be enduring and cannot be mitigated by measures to make the person attracted to females. The target of one's sexual desires, like almost every other human characteristic, is a function of innate inclinations and environmental cues, traumas, or reinforcers. It appears that the development of sexuality is highly influenced by one or more of the following attributes: gender identity, gender preference, erotic target preference, erotic focus (passive or dominant), and erotic intensity (strong or weak).

Sexuality is much more fluid and difficult to define than the anatomical features of sex. There are certain physical characteristics that tend to define males or females, although the degree of sexual dimorphism can be altered by genetic, environmental, or pathological factors. While males and females differ physically in several fundamental ways, these differences can be greater in some individuals than in others. When a person is equidistant between a male and female, he or she can be said to be a hermaphrodite. If a female is morphologically very female or a male is highly morphologically male, it is generally apparent. However, most of us fall somewhere along a single dimension of gender. And despite the large range in which one can manifest as a male or female, most of us feel quite comfortable treating gender as a category—especially when it comes to categorizing ourselves and others.

The expression of a person's sexuality is even more complex. It is multifaceted and multidimensional. A person could feel himself or herself to be of a gender that is concordant with or distinct from his or her biological status. Thus a very masculine man could feel himself to be a feminine woman. Or, for that matter, he or she could perceive himself to be an androgynous woman who finds men, women, or both (or neither) sexually attractive. She could allow her sexuality to dominate and define almost every aspect of her life or feel it to be a subordinate factor in life. The striking quality of human sexuality is that it can and does take so many forms and intensities. The medley of physical and psychic sexualities is a product of our genes, developmental factors, and our culture. It begins at conception and develops throughout life.

DEVELOPMENT OF GENDER

Often when we speak of gender, we think only of a dichotomy of male and female, and we feel like we can easily classify a person within a gender. However, when

we dig deeper into this, we can see that gender is not a simple dichotomy—it has many variations, and it is not always as apparent as we think (Roughgarden, 2004). Unlike sex, one's gender is defined not only by one's biology—chromosomes, hormones, and morphology, but also by sociocultural influences and the life history of a person. Appearance is one aspect of gender, and human beings are able to change it to varying degrees to make themselves appear more concordant with a gender identity. However, gender is not complete without action, which includes sexual and social behaviors. Gender differences can be defined biologically as differences in our genes, brain, and genitals. But this is often more difficult than it may seem. As there are many straightforward cases where biology, gender, and gender identity go hand in hand, there are also many in which physical markers are at odds with each other or with the individual's actions. But a good place to be looking for gender is in the brain.

Brain and Gender

Development of gender differences is a complex interplay of genetics, prenatal milieu, developmental signals, social factors, and cultural values. And these factors begin their roles by altering the brains of developing humans to align with a gender identity. In contrast, the Standard Social Science Model claims that male and female babies do not differ when it comes to their brains (Tooby & Cosmides, 1992). That is, their later differences are a consequence of socialization (Miller & Kanazawa, 2008). However, studies conducted on human babies and monkeys show that even when babies are quite young, there are gender differences in their preferences toward stereotypical toys (Alexander & Hines, 2002; Connellan, Baron-Cohen, Wheelwright, Batki, & Ahluwalia, 2000). In fact, there are gender differences in female and male brain anatomy. Male brains are slightly bigger than female brains, especially in terms of the thickness of the right cerebral cortex (Linden, 2012).

Furthermore, both male and female brains contain a cluster of cells in the hypothalamus, INAH-3, that act as receptors for testosterone and thus male-typical sexual behavior; this cluster is of larger density in male brains. On the other hand, the corpus callosum and anterior commissure, fibers that connect the sides of the brain, are more highly developed in women. With these anatomical differences come some behavioral gender differences. Men tend to be better at mathematical and spatial reasoning, and women have an advantage when it comes to social intelligence, verbal skills, and creativity (Baer & Kaufman, 2008; Else-Quest, Hyde, & Linn, 2010; Halpern, 1997) It is also worth noting that the larger the corpus callosum in a woman, the higher her verbal test scores are likely to be (Driesen & Raz, 1995; Sommer, Aleman, Bourma, & Kahn, 2004).

Chromosomes and Gender

Given that sex is an indispensable component of life functioning, the fact that it can take so many forms is quite remarkable. How does this variety happen? First, it is important to note that most of the many expressions of sexuality allow for reproduction. And those that prohibit reproduction may yield indirect benefits to reproductive potential. This potential is implied in an evolutionary explanation of homosexuality, which states that a homosexual will increase the likelihood of the survival of close relatives by offering care or sharing genes that assist close relatives in their reproduction (see Chapter 5).

The discovery that humans have far fewer genes than previously believed necessitates a strong role for environmental forces in all facets of human development (Paerl & Salzberg, 2010). Humans simply do not have enough genes to account for all of their features and behaviors. Even the seemingly discrete and well-defined trait of gender can be expressed in several ways. Specifically, one's gender appearance is predominantly determined by the presence of X or Y chromosomes. With rare exceptions, the 23rd pair of each chromosome has either an XX or an XY combination of chromosomes. The XX yields a female and the XY yields a male. Interestingly, as canonical as this may seem, it can vary quite a bit. And when it does, the role of genes becomes a profound factor in gender and sexual development.

Aneuploidy

The relatively rare exceptions to the XX and XY chromosomal combinations include the XXX (trisomy X), X0 (Turner syndrome), and XXY, XYY, XXXY, and XXXXY combinations. These abnormalities are a type of aneuploidy in which an individual has more or fewer than the standard 46 chromosomes. In the event that one of the 23 chromosome pairs loses a component and only one of the pair remains, the offspring with that genetic complement is said to be monosomic. In contrast, if an additional chromosome is added to the pair, it is trisomic. Aneuploidy typically results from errors during cellular meiosis.

It is important to note that sex chromosome abnormalities account for a very small portion of sexual expression and variation. For example, the frequency of XXY is approximately 1 in 1,000 births, of XYY is 1 in 1,100, of XXX is 1 in 2,000, and of X0 is 1 in 2,700. Overall, less than 0.3% of people have a sex chromosome abnormality (Boyd, Loane, Garne, Khoshnood, & Dolk, 2011; Morris, Alberman, Scott, & Jacobs, 2008).

Even allowing for a substantial number of people with sex chromosome aneuploidy who are likely to go undiagnosed, aneuploidy is so rare that it cannot explain the prevalence of variations in expressions of sexuality and gender. However, these variations do demonstrate the importance of genetic factors in the determination

of certain anatomical anomalies and specific mental disorders. For example, the presence of the extra X chromosome yielding the XXY (or 47,XXY) karyotype produces a condition called **Klinefelter syndrome**. Men with this genetic condition tend to suffer from motor control impairments such as reduced coordination and slowed running speed. They tend to be taller than average, have some degree of **gynecomastia** (male breast development), and have reduced testicular size. In addition, men with Klinefelter syndrome tend to be impaired with schizotypal and autistic spectrum symptoms (van Rijn, Swaab, Aleman, & Kahn, 2008).

Men with Klinefelter syndrome can also have 47,XXY/46,XY or 47,XXY/46,XX **mosaics**. People with genetic mosaicism have different genotypes or genetic codes among the cells in their body. Thus some men with Klinefelter syndrome can have XXY chromosomes in some cells and XY in others. In the former case, some of the men's cells have XXY chromosome combinations and some have the normal XY combination. In rare cases, there are males with the XX chromosome combination. XX males tend to have had a portion of the Y linked to an X chromosome during meiosis (Page, Brown, & de la Chapelle, 2007).

Sex chromosome aneuploidy is often manifested in the form of various other chromosomal combinations that lead to degrees of intersexual conditions. One such condition that has been closely attended to by the popular press is the XYY, after it was found that serial killer Richard Speck was falsely reported to possess the XYY karyotype. Speck tortured, raped, and killed several student nurses, which seemed to validate the presumption that men with the XYY karyotype are prone to aggression and greater physical size.

The XYY karyotype was first linked to criminality by Jacobs, Brunton, Melville, Brittain, & McClemont (1965), who incorrectly claimed an association of this karyotype with low intelligence and aggressive behavior. This hypothesis was tested and rejected by several studies of incarcerated men. In one such study (Witkin, Goodenough, & Hirschhorn, 1977), 139 Danish men who were significantly taller than average were sampled. Within this group, 12 men were found to have the XYY karyotype and 16 had the XXY (Klinefelter syndrome) karyotype. Five of the 12, or 41.7%, of XYY men were found to have a criminal conviction, and 3 of the 16, or 18.8%, of the Klinefelter men had a conviction. Although individuals possessing the XYY had a nominally higher crime rate than those with the XXY, the difference was not statistically significant. Only one crime for which the XYY males were convicted involved a violent act against another person. The authors concluded that the extra Y chromosome did not exaggerate male aggressiveness and the best explanation is that trisomy, either in the form of XXY or XYY, increased the likelihood of lower intellectual performance, which explained the higher conviction rates for both categories of men.

In addition to a higher rate of cognitive deficits, it was observed that men with these conditions have a reduced life expectancy of approximately 10 years

(Stockholm, Juul, & Gravholt, 2010). Furthermore, men with the XYY karyotype tend to score lower on intelligence tests (Theilgaard, 1984) and suffer from language deficits (Ross, Zeger, Kushner, Zinn, & Roeltgen, 2009). With almost any karyotype involving a chromosomal deletion or addition, cognitive deficits seem to result. The huge evolutionary investment in our complex but fragile brain did not come without risks. The higher representation of XYY men in prisons is likely to result from lower social status, with which impaired health, cognition, and language skills are usually associated.

Another disorder related to chromosomal quantity that often results in significant impairments is **Turner syndrome**. Women born with this chromosomal variation have only one X chromosome. Women with Turner syndrome (or monosomy X) tend to be shorter than average, have a partially webbed neck, have attenuated secondary sexual features—including small, widely spaced breasts; in-turned elbows; delayed puberty; and high waist-to-hip ratio.

Girls and women with Turner syndrome commonly suffer from cognitive deficits (Hong, Kent, & Kesler, 2009), including reduced verbal IQ, visual-spatial deficiencies, impaired affect recognition, and lower attention span, among others (Ross et al., 2002). However, a pattern emerged when the cognitive capacities of women with Turner syndrome were studied based on gender norms. Those with Turner syndrome exhibited deficiencies in almost all cognitive tasks in which women typically excel relative to males. Furthermore, women with Turner syndrome tended to do better than non-Turner syndrome women in tasks in which men typically excel (Collaer, Geffner, Kaufman, Buckingham, & Hines, 2002).

Additionally, Turner's syndrome may result in a more "female" version of Asperger syndrome. According to Baron-Cohen and his colleagues (Baron-Cohen, Auyeung, Ashwin, & Knickmeyer, 2009; Ingudomnukul, Baron-Cohen, Wheelwright, & Knickmeyer, 2007), autistic spectrum disorders are a result of highly elevated levels of testosterone in the fetal brain, causing the child to be born with a hypermasculinized brain, which is associated with an exaggeration of typical gender cognitive styles. Just as males tend to be less sensitive to the emotional expressions of other people, those with autistic spectrum disorder may find facial expressions to be inscrutable. Furthermore, just as males tend to be more focused on working with objects rather than developing social relationships, autistic individuals are inclined to focus almost exclusively on technology or devices. If Baron-Cohen is correct—that an excess of fetal androgen can profoundly shape an individual's world view, then it is not a stretch to conclude that the reduction in the estrogens experienced by X0 females produce the characteristic changes observed in Turner syndrome. That is, virtually all of their deficits are in skills commonly seen to be stronger in females, and their strengths are those that are typically associated with males. Notably, when the present author was teaching

Turner syndrome's ranges of impairments to a graduate class, a student interrupted to point out that these impairments were not invariable. After class, this quite ordinary-looking young woman who was completing her MA in a social science informed the instructor that she had this genetic variation. Other than being a bit shorter than average, there would have been no way to distinguish her from any other student based on her demeanor or performance.

X and Y Chromosomes and Sexual Development

As stated previously, the X and Y chromosomes are responsible for the male and female phenotypes. For the vast majority of humans, there are two combinations: XX and XY. Given the expansive range of sexual expressions and rarity of sexual genetic disorders, other factors beyond the XY combination must be in play. The more unusual karyotypes are generally associated more with generalized deficits and pathology than with variation in sexuality.

A generally accepted principle is that everyone begins as female and that the introduction of the Y chromosome initiates the transition from femaleness to maleness. This is primarily accomplished via the *SRY*, the sex-determining region on the Y chromosome. Located on the short or p-arm of the Y chromosome, the *SRY* coordinates gonadal differentiation (Haqq & Donahoe, 1998). Irrespective of the number of X chromosomes, from X0 to XXXXY, the presence of the single *SRY* gene will result in the masculinization of the fetus. When *SRY* is absent, the protogonads develop into ovaries and when they are present, they form testes.

Biologists often describe *SRY* as the master gene controlling sexual differentiation and the essence of maleness. However, the process is considerably more complex than that of a *SRY* gene transforming a female fetus into a male fetus. In fact, at least three genes play a major role in sex determination: *SRY*, *DAX1*, and *SOX9* (Hanley et al., 2000; Patel et al., 2001).

The fact that *SRY* alone does not produce maleness was demonstrated by a study in which genetic female mice had an *SRY* gene implanted. Only 30% of the mice developed male genitalia (Roughgarden, 2004). Even more surprising is that there are XX males without *SRY* genes. Research has shown that they have greater activity in their *SOX9* genes (Kojima et al., 2008). Thus the determination of gender requires a complex interplay of several genes. In most cases, the presence of the *SRY* gene in mammalian female embryos will generate many masculinized females, but without other critical genes no males will be produced. In a study that examined the polygenic nature of sexuality (cited in Roughgarden, 2004), researchers deleted the *SRY* gene from the Y-chromosome of male mice fetuses. The result was that the majority of these genetically male mice produced eggs rather than sperm cells, some of which were fertilized and produced offspring.

The *WT1* gene, which acts to prevent Wilms' tumor (a type of kidney cancer that primarily affects children), plays a role in both tumor suppression and sex determination. During gonad formation, the *WT1* seems to work with the *SF1* gene in the development of both the adrenal and gonadal system. It also appears that the *SF1* gene works with the *WT1* gene to activate the *SOX9* gene to trigger the development of the testes. In addition, the *WT1* gene plays a role in the expression of the *SRY* gene, which in turn inhibits the *DAX1* gene that allows the *SF1* and *WT1* genes to trigger *SOX1* to initiate testicular development (Biason-Lauber, 2010). In a female fetus, the *DAX1* gene deactivates the *SF1* and *WT1* genes, preventing them from promoting testicular development, allowing instead for the ovaries to develop.

Plasticity of Gender

Evidence strongly indicates that from the standpoint of chromosomal interactions, gender has a large degree of developmental plasticity. Nugent et al. (2015) revealed some of the complexities of gender development by chemically inhibiting the methylation in genes that produce estradiol (the most active estrogen) in developing rat brains. These researchers noted that the enzyme DNA methyltransferase can suppress gene expression, which can be offset with brain levels of estradiol. Nugent et al. found that by inhibiting DNA methyltransferase, the brain features associated with gender were altered. Significantly, this study confirmed that epigenetics—the process in which gene expression is altered as opposed to altering the genes themselves—plays a significant role in gender development. The work also showed that the critical time period for brain gender development is longer than previously believed. In fact, the laboratory was able to transform a typical female brain into one with male features late into neurological development by injecting DNA methyltransferase inhibitors into the preoptic area of the brain—an area associated with male behavior in humans. The enzyme was injected after the first week of life, a time in which it was previously believed that sexual dimorphism was complete. This enzyme disrupted the methylation of genes that would have been required for estradiol inhibition in the developing brain; estradiol has the paradoxical effect of masculinizing the preoptic area of the developing brain. Despite the time of the injection into female rats, their brains essentially became male brains. Additionally, these females subsequently exhibited male behaviors (McCarthy, 2008; Patchev, Hayashi, Orikasa, & Almeida, 1995).

Adding to the complexity of this research was prior research showing that a protein associated with language acquisition also played a role in sexual differentiation, suggesting that communication is a more essential feature of females (Nugent et al., 2015). Other similar research found that microglia, brain cells associated

with immune and inflammatory responses, play a role in the masculinization of the brain. It seems that their production of the inflammatory prostaglandin molecules is linked to sexual differentiation in the brain.

Thus the brain has distinct male and female qualities that are correlated with neurological development, hormones, immune modulators, and other complex factors. It follows that with so many factors in play in gender identity, there must be many ways it can develop differently. Differential development in gender identity has been found to be at least partially based on brain region interconnections. Georg Kranz et al. (2014) and his colleagues examined transgender, male, and female research subjects using diffusion-based magnetic resonance tomography (MRT). This technique can find subtle differences in the white matter of the brain, which consists of myelinated neurons that connect the various processing modules of the brain. Their results showed that interconnections were different in female and male subjects; moreover, transgender people had connections that were somewhere between those of males and females. In addition, the levels of testosterone in the blood showed significant correlations with varieties in these connection structures. Therefore, both hormone levels and brain region interconnections appear to influence gender identity.

Such findings explain why sexual orientation, gender identity, the development of paraphilic behaviors, and other sexual expressions can vary tremendously in people who have the standard XX or XY chromosomes. Relatedly, men with the common XY configuration can have vast differences in the way their maleness is expressed. The same is true for women with XX chromosomes. These women can be lesbian or straight, have high or low libidos, can be passive or active, and so on. It is highly likely that few of the variations in sexual development are due to genetic error or pathology. A great many genes play a role in human sexuality, but few of them are pathological. The expression of sexuality is a function of many genes and environmental, developmental, and biological events. And it remains to be seen which expressions can be considered normal.

Gender Identity

Most developmental psychologists would accept that gender development is an intrinsic part of the overall developmental process. Gender development differs from many other developmental processes in that it can take so many forms. One variation in this aspect of development is the phenomenon in which a child's developing gender identity diverges from his or her apparent sex. Two divergent perspectives from leading authorities are presented below. Dr. Diane Ehrensaft strongly argues for early and consistent support for the transgendered child. She suggests that doing otherwise risks emotional damage. In direct contrast,

Dr. Kenneth Zucker proposes that early sexual development is fluid, and early encouragement of a transgender identity can inadvertently force the child into a role that may have been transitional. His most extreme critics have accused some of his treatments to be akin to reparative therapies for gays, a criticism he has strongly refuted. In studying the nearly obverse positions on the nature and treatment of trans individuals, the style of these key figures needs to be considered. Dr. Ehrensaft has focused a great deal of her work on reaching popular audiences, writing books and magazine articles for laypeople. In contrast, Dr. Zucker has largely confined himself to the academic world, producing prodigious amounts of technical publications. Dr. Ehrensaft's more extensive communication with the trans and lay community is likely to have created a more receptive audience for her work, while Dr. Zucker's focus on writing for other professionals may have led to a sometimes incomplete appreciation of his work.

Interview With Dr. Kenneth Zucker



Portrait of Kenneth Zucker. Illustration by Emrazina I. Prithwa © 2015.

Kenneth J. Zucker, PhD, (1950–) is the Clinical Head of the Gender Identity Clinic, Child, Youth and Family Services at the Centre for Addiction and Mental Health in Toronto, and professor, Department of Psychiatry, University of Toronto. He earned his PhD in developmental psychology at the University of Toronto. His clinical research pertains to gender identity development in children and adolescents, gender dysphoria, and disorders of sex development. He was the chair of the *DSM-5* Work Group on Sexual and Gender Identity Disorders. Since 2002, he has been the editor of *Archives of Sexual Behavior* and is a past president of the International Academy of Sex Research. He coauthored with Susan J. Bradley *Gender Identity Disorder and Psychosexual Problems in Children* (Guilford Press, 1995) and has coedited two books. He is the author of over 200 peer-reviewed articles and book chapters primarily dealing with sexuality and gender.

Dr. Zucker has treated thousands of individuals with conflicts in their sexual behavior. Most compelling is his research on transgendered individuals or individuals with conflicted sexual identities. He has debated Dr. Ehrensaft, who advocates early encouragement and support for transgender youth, and argues that sexual development is a malleable and dynamic process—that gender identity may very well change and strong support might artificially suppress a process in a state of change.

What do you feel are the most important areas of your research?

Dr. Zucker: Okay. Well, I'm the Clinical Head of the Gender Identity Clinic for children and adolescents at the Center for Addiction and Mental Health in Toronto, and our clinic is the oldest child and adolescent clinic internationally. We started about 40 years ago. So we've seen large numbers of children and adolescents anywhere between the ages of 3 and 20. Over the years, I've done research on assessment and diagnosis, and associated psychopathology. I've done various research studies on causal mechanisms and I've also conducted long term follow-up studies. So those are the main domains that I've conducted research in over the years, children and adolescents.

And your work has been primarily on gender sexuality, gender disorders, things like that.

Dr. Zucker: On what used to be called Gender Identity Disorder in the *DSM*, now the diagnosis is called Gender Dysphoria.

Right.

Dr. Zucker: And I was the chair of the *DSM-5* Working Group on Sexual and Gender Identity Disorders.

And are you satisfied with the way it came out? I guess being the chair, I guess you would.

Dr. Zucker: Well, I think I was pretty happy with the outcome for the gender dysphoria diagnosis. I would say that almost all of the recommendations that were made by the working group were accepted by the Board of Trustees of the American Psychiatric Association.

Now, my impression is that you're both a clinician and an accomplished researcher. You work directly with people with gender dysphoria or previously Gender Identity Disorder, correct?

Dr. Zucker: Yes. My official title at my hospital is "clinician scientist." So I've been fortunate to always be able to integrate the clinical work with various research questions.

How has your clinical work resonated with your research? And I'll get to some specific questions about your research, but what drove what? I mean, what led to the research questions? Was it research driving your clinical work or the other way around?

Dr. Zucker: I think it's interactive. So I think that when one spends a lot of time on the ground working with clients, one is always learning new things or observing new phenomena. So for example, one big change in this field has been what I would describe as the increasing visibility of transgender people. There's something in all forms of media about people with gender dysphoria or transgenderism all the time now.

The *New York Times* recently, for example, started a series of editorials about transgender people; it's everywhere. And one big change that we started to notice in our clinic about 10 years ago was a sharp increase in the number of adolescents being referred, whereas in previous years, we always had many more children than adolescents. Now, that's completely flipped where we see many more adolescents than children and in addition to the increase in adolescent referrals in general, we've

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also noted a dramatic change in the sex ratio of adolescents being referred. In the past, we were seeing two males for every female. That's now completely flipped, and we now see two females for every male, and that's also been observed in other clinics internationally.

And why do you think that is? Is that reporting bias or an actual change?

Dr. Zucker: Well, it wouldn't be a reporting bias because we're just coding whether people are male or female, but what is driving the shift in why more females are being referred than males? So for example, one possibility for the general increase in referrals is that there is less stigma attached to identifying as transgender or even saying, "I think I have gender dysphoria." Another possibility for the general increase is that now, many centers, including our own, will provide hormonal treatment for adolescents which wasn't available until around 1999, 2000. But these general factors don't really account for why there's now this inversion in the sex ratio. So why are there now so many more females than males? One possibility is that there is more stigma attached to being a male-to-female transsexual than there is to being a female-to-male transsexual. So maybe it's easier now for females to come out as transgendered because of less social stigma, but we don't really know for sure about that. I think another factor that may be going on nowadays is that it's almost "cool" to be transgendered.

So it might be false reporting in some cases?

Dr. Zucker: No. It's a very interesting question. We certainly are seeing more adolescents who are not saying, "I want to go completely from male to female or completely from female to male," but there are more kids who are identifying somewhere in between. So some kids might say, "I'm bi-gender" or "agender," so "I feel like both or I feel like neither." And for some of these kids, it seems to be embedded in a more generic identity confusion, "Who am I?" And nowadays, in looking sort of for a place where one fits, some kids feel comfortable identifying as gender-queer or somewhere in the gender nonconformity spectrum.

You have written a great deal on all the permutations and variations of how it could be. You wrote about CAH [congenital adrenal hyperplasia—a condition in which the gestating mother produces excess male hormones] and how the prenatal hormonal milieu affects sexuality. Could there be a greater incidence of this or as you're saying, more that has become cool?

Dr. Zucker: Yeah, it's either become cool or less stigmatized. I mean, there's no evidence in our clinic or in other clinics that we're seeing an increase in the percentage who have some type of disorder of sex development as in congenital adrenal hyperplasia. I mean, we do see a small percentage of children and adolescents who have an intersex condition and also have gender dysphoria, but I don't think that explains it.

What about comorbidities? You wrote about borderline personality disorder (BPD) in people with gender identity issues. Do you see a higher rate of comorbidities along with the increased rates of sexual or gender differences and presentation to you?

Dr. Zucker: Well, it's a very interesting question. We've done a number of studies on both children and adolescents. To see to what extent they have other forms of associated psychopathology or behavioral and emotional problems. And I've done a number of collaborative studies with colleagues from the Netherlands, and we find in both children and adolescents that they do have higher rates of other types of behavioral and emotional problems compared to nonreferred children.

And the degree of associated difficulty is in terms of its intensity or severity; it's pretty similar to what one sees in clinic-referred children in general. So children and adolescents with gender dysphoria are an at-risk group for other types of associated psychopathology. And one sees the same thing in adults with gender dysphoria.

In associated psychopathology?

Dr. Zucker: One line of research that we've been doing recently and so have others is looking at the association between gender dysphoria and autism spectrum disorder. This has been an extremely interesting topic over the last 10 or 15 years where we're clearly seeing more children and adolescents who have a diagnosis of autism spectrum than we used to. But it's not clear if these elevated traits of autism spectrum disorder are unique in children with gender dysphoria—you also see it in other clinical populations, so it appears to be nonspecific.

Wouldn't that dovetail with the work of Baron-Cohen [Dr. Simon Baron-Cohen], who says autistic spectrum disorders are at least in some cases mediated by increased maternal testosterone, which could also masculinize the brain?

Dr. Zucker: Yeah, it's Baron-Cohen's theory. The theory it seems to me works for biological females. So let's say there's a hypothesis that biological females have been somewhat androgenized and that leads to the systematizing cognitive style that he talks about with people with autism. And let's say an elevated exposure to testosterone could masculinize gender-related behavior.

So that would work quite nicely for females, but the theory I think is more problematic for males, because if males with autism are high in systematizing because they've been exposed to higher levels of testosterone, why would you see males with autism also having gender dysphoria since the males are very feminine in their behavior?

So the theory doesn't work?

Dr. Zucker: The theory works better for females than it does for males in my opinion.

Well, in general, what is your personal hypothesis or theory as to gender identity both dysphoric or traditional or normal?

Dr. Zucker: Of course that's a Nobel Prize question or \$64 million question. My own perspective is that we need developmental multifactorial models to explain gender dysphoria that are both biological and psychosocial in origin. So I think there's a lot of research that is very suggestive of biological factors, whether we're talking about genetic influences or some subtle variation in prenatal sex hormone exposure.

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So for example, a very hot topic nowadays is to do structural magnetic resonance imaging to see whether or not certain sex dimorphic structures in the brain are altered in people with gender dysphoria. And there are a few studies on adults that suggest that there are some alterations even before hormonal treatment, and the pattern suggests an intermediate position overall.

We currently have just started a grant-funded study where we're going to look at MRI [magnetic resonance imaging] in adolescents with gender dysphoria both before and after hormonal treatment. And our pilot data on females with gender dysphoria so far are consistent with what is being reported on adults—that there may well be an intermediate neural structure pattern compared to males and females.

The reason that I think psychosocial factors are important has to do in part with what we know about the natural history of gender dysphoria. So if you start with samples of children, the majority of follow-up studies to date show that a large percentage of kids with gender dysphoria don't persist. So in other words, if they are followed up in their late adolescence or young adulthood, a lot of kids with gender dysphoria don't have it at follow-up. They are content with their gender identity that matches their birth sex. They don't report gender dysphoria. So in our two follow-up studies of girls and boys, we found a persistence rate of around 12% to 15%. So most of the kids we've followed up don't continue to have gender dysphoria.

So it's malleable.

Dr. Zucker: It's malleable. Now, if you look at patients who come in for the first time in adolescence, I would say probably 75% to 80% of them persist in their gender dysphoria, and the gender dysphoria goes away only after they transition socially to the other gender and receive biomedical treatment. So the persistence rate is much higher if you have gender dysphoria when you come in the front door in adolescence. It's probably even higher for adults. So from a developmental perspective, I think that the data show that there is less malleability. I've seen many 3 and 4 years old who would meet the diagnostic criteria for gender dysphoria, and they can be quite severe, but it desists. So I think the fact that there is variation in long-term outcome suggests that there is more than just a straightforward biological explanation when it comes to everything. I think the psychosocial factors also are part of the overall picture.

Was John Money's big mistake with David Reimer that he overplayed the social malleability?

Dr. Zucker: Well, that's a very important question. Now, the David Reimer case was an N of one, and one could argue that the experiment of nurture, so to speak, didn't work. But why did it not work? I'll add here that we had published in *Pediatrics* in 1998 another case of ablation of the penis in which a biological male had his penis accidentally burned off during a circumcision at the age of 2 months, and the decision was made not by us (John Money was actually involved in that case as well) to reassign the baby to be raised as a female at age 7 months. We actually did a follow-up study of that patient at the age of 26 because the patient happened to be Canadian, just like the Reimer case, and at age 26, the patient reported being content as a female. She was predominantly sexually attractive to females and was very masculine in her gender role behavior in her occupation, but she did identify as a female. But I think if one looks at the literature on intersex conditions overall, the long-term outcome around gender identity really has to be looked at on a syndrome-by-syndrome basis.

For example, let's take congenital adrenal hyperplasia in genetic females who are assigned female at birth—they have been exposed prenatally to excess androgen, these girls are behaviorally masculine in many ways, they have a higher rate of bisexuality or homosexuality compared to unaffected females, but the substantial majority have a female gender identity. There is a small percentage who do develop gender dysphoria, but let's say a good 90% or more, despite being exposed to high levels of prenatal androgens, do develop a female gender identity.

Which allows for differentiation between temperament and gender identity, so that would validate or at least correlate with Daryl Bem's Exotic Becomes Erotic theory, that somebody could have a feminine or masculine temperament without a concordant gender?

Dr. Zucker: Yes, I would agree with that.

Would you say that that would be reasonable for homosexuality, and as a follow-up, what do you see as the connection between homosexuality and gender identity?

Dr. Zucker: I mean, gender identity, gender role behaviors, sexual orientation are all distinct psychological constructs, but there's also interrelation. That's another area that makes it complicated. So a lot of gay men and lesbian women will report retrospectively a lot more gender-nonconforming behavior than heterosexual people, and that's been demonstrated in many, many studies over the years and nobody disputes it. And in fact, when you do follow-up studies of children in the gender identity disorder spectrum, the majority of boys and certainly a good percentage of girls grow up to be gay or lesbian. And I think that essentially there is an overlap in terms of childhood gender nonconformity and long-term gender identity outcome and long-term sexual orientation outcome. So for example, some children might grow up and initially identify as gay, then they may switch and identify as transgender, and then they may go back to being gay. So I think the identity one settles on can be quite variable and due to a whole variety of factors.

But you quote that homosexuality and gender identity were distinct psychological constructs. So you would say that they're not a continuum of sort, but they're quite distinct.

Dr. Zucker: Yeah. So I think gender identity, the sense of self as being a male or a female or some other gender category is one thing—who you are attracted to sexually, your sexual orientation is another thing, it's an association. So although a feminine boy is much more likely to grow up to be gay than a masculine boy, the correlation is far from perfect.

Would you say that Bem's model is a good one?

Dr. Zucker: Well, Bem's model from 1996, where he was essentially trying to argue against strict biological reductionism by adding how temperament might mediate the relationship between, say femininity in a boy and later sexual orientation in which the boy eroticizes other males because he feels different from them, so the exotic becomes erotic.

I would say that specialists in the field have been skeptical of the model, but nobody has actually ever tried to test it. I think that when it comes to males, the general consensus is that sexual orientation has a strong hardwired biological component to it, whereas people might say that when it comes to females, it appears to be more flexible.

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Well, that's the evolutionary psych model in early female tribal or proto-humans—it served the female to have female bonding. Would you accept that evolutionary model that it's adaptive for females to be sexually plastic and less so for males?

Dr. Zucker: Well, with regard to evolutionary psychology, I would say that evolutionary psychology has spent more time thinking about how homosexuality reduces reproductive fitness—that gay men are much less likely to have children than heterosexual men. If there is a gene for homosexuality or set of genes, why does it persist in the population?

Well, you've heard of the "Sexy Sister" hypothesis? What do you think of that model?

Dr. Zucker: Well, what I was going to say about male homosexuality is one popular model, the idea that in gay males, there's been two lines of research recently. One is that female relatives of gay men produce more children. And so maybe there's something genetic going on and that the way gay men contribute to this is by directing more altruistic behavior to their nieces and nephews. The evidence on this is mixed, but it's been a hypothesis that a number of people have been looking at. Is that what you mean by the "Sexy Sister" hypothesis, that they have more children?

Yes. Another area of research that I see you have covered and, by the way, I must say your research is extremely impressive in paraphilic sex. There's a community of paraphiles, and one clinician, Dr. Charles Moser, who says paraphilic sex represents a distinct sexual orientation and deserves the same credit. What would you say from your work and your clinical research is the origin of paraphilic sex?

Dr. Zucker: Well, there are many types of paraphilic sex, and I would say that some people have argued that men who have an erotic preference for children or early pubertal children or adolescents (pedophilia, hebephilia), have another sexual orientation that is different from the more standard heterosexual, bisexual, homosexual for physically mature partners.

But some people are uncomfortable saying that they have a sexual orientation in the same way we think about it for people who are attracted to physically mature partners. But I think although it's politically incorrect, I think pedophilia is another sexual orientation.

In this book, I propose that almost all sexual variations are connected with the drive for either domination or submission, and that all paraphilic sex could be linked to one of these two impulses, which would be evolutionarily adaptive and occur in ordinary sexuality. Do you have a feel on that?

Dr. Zucker: A number of people argue that if you have one paraphilia, on average, the odds are greater that you're going to have another paraphilia, and exactly how these cluster, they may well cluster in the way that you describe. So for example, some men with pedophilia may have another paraphilia like exhibitionism, or there are males with transvestic disorder who are also masochistic. So yeah, I think there are these interesting associations.

Source: Abrams, M. (2013, December 28). Interview with Kenneth Zucker. [Personal interview].

Interview With Dr. Diane Ehrensaft



Portrait of Diane Ehrensaft. Illustration by Emrazina I. Prithwa © 2015.

Diane Ehrensaft (1946–) is a clinical psychologist, the director of Mental Health and founding member of the Child and Adolescent Gender center. She has focused her research on the areas of child development, gender, and family relationships. Dr. Ehrensaft has been writing on and working with transgendered people, most notably youth, for much of her lengthy career. She is the author of both books and articles advocating early support for transgendered youth. She sharply differs from Dr. Zucker interviewed above in that she believes that failure to support young people in their preferred identity risks harm.

Would you describe your involvement and interventions in working with and in theorizing with transgender people?

Dr. Ehrensaft: Okay. First I want to clarify that the main people I work with are children through young adults. Not too much with older adults. So I would describe the theory and practice model I work from as the Gender Affirmative Model, though in a meeting we had just this past weekend, we came across some problems with the attributions of the term *gender affirmative* versus *gender exploring*. But we decided that this is the name that best describes the theory and approach. And the theory and approach is as follows: number one, that gender variation diversity is not a signal of pathology, but a healthy variation of human development.

And that if there are emotional problems for the child, they typically fall in one of two domains. One is the negative responses of other people to somebody who is stepping over the line in terms of gender as defined and prescribed within the culture that the child lives in. So it's the outside responses to individuals that are often the cause of gender-nonconforming children's psychological problems. And the second is when you feel a discordance between the messages from your brain and mind and the body you have in terms of putting your gender together that can be an internal stressor, but it still has the social context affecting those feelings, specifically, how we define gender based on bodies.

When you're talking about stressors, you're talking about people having social stresses because they're at odds, they're psychologically affected by other people's reactions to them?

Dr. Ehrensaft: Well no, it's a little different than that. A child or youth may have the internal stressor about the mismatch between their body and the gender they know themselves to be because of how we define gender. So if we define male equals penis, female equals vagina, and somebody who is a vagina-bodied person experiences himself as male, they may have an internal problem regarding the discordance between their sex-labeled bodies and their affirmed gender identity, which in psychological terms is identified as body dysphoria. And we would have less body dysphoria if there was a social context in which there were simply penis-bodied people and

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vagina-bodied people and gender could vary accordingly, so that it would be "normal" to be a penis-bodied female or a vagina-bodied male.

So the gender is independent of any physical aspects?

Dr. Ehrensaft: Exactly. The gender is independent of genitalia essentially. So when I say that there's an internally stimulated gender stress based on body–psyche mismatch, which is often the case for children who are diagnosed as gender dysphoric, you might hear one of those little people say, "Why did God make me this way? He gave the wrong part," or "Why can't I go back inside mommy's tummy and come out with the gender I was supposed to be with the parts I'm supposed to have?" That would be an example of body dysphoria showing up at early ages. So coming back to the model . . . observation from the gender affirmative lens is that pathology lies more in the culture than in the individual. Eliminating the pathological labeling of gender nonconformity, the goals of giving support and offering treatment are to enhance gender health, defined as allowing someone to define their own gender self and live accordingly without aspersion, rejection, or violence coming their way.

So the main thing is support and letting someone be in charge of their own identity.

Dr. Ehrensaft: We substitute acceptance and support for demands for conformity and normativity.

And when you work with people clinically, you address the dysphoria from living in a society that doesn't do so?

Dr. Ehrensaft: Absolutely. That said, the first thing when I work clinically is to always start with the individual and not start with the social context for that child. I want to find out what's going on for them and to listen to what's on their mind, and I want to understand where their experience is coming from. When appropriate, I will definitely bring in the social contexts in which they're having their experience.

And as you said, you work primarily with children. Another authority on this topic is Dr. Kenneth Zucker, who has also worked with transgender children and disagrees with your approach. Let me give you my understanding of the dispute; it is that he believes that there should not be support or encouragement for the gender identity until their late maturation, and your position is for early support. Was that the essential dichotomy?

Dr. Ehrensaft: There are two dichotomies. That is absolutely one. The second one is equally as important, which is the notion of what it means to live in your own skin. In Ken Zucker's theory, he believes or advocates that at earlier ages you have essentially a malleable gender brain and gender mind so that it is possible to steer young children in the direction of living comfortably in their own skin, defined by him as accepting that gender identity that matches the sex assigned on their birth certificate. And the means for doing that include a course of behavior modification, for example, introducing the child to toys that are sex-typed for their assigned gender and rewarding the child for playing with said toys. The method also involves encouraging and facilitating same gender

friendship and activities and bringing in the parent or an adult role model who is of the same gender as the assigned gender of that child so that they can learn "appropriate" gender behaviors and develop identifications with adults who represent the gender we're trying to get that child to be. It is believed that exposure to such experiences will allow the child to be able to live in their own skin; that is, be the gender everyone expected to be based on the M or F printed on their birth certificate. So "I was born a boy, I'm okay being a boy" would be what that would look like, or "I'm born a girl, I'm okay being a girl."

So, to help a child maintain their biological gender.

Dr. Ehrensaft: And Dr. Zucker believes such a program is a valuable and successful intervention for young children and that indeed the underlying premise is that this intervention wards off a transgender outcome, which is a positive outcome, because being transgender presents so many more challenges. Ergo, we would definitely want to prevent a transgender outcome if we could.

Thanks for the clarification. Are you familiar with John Money?

Dr. Ehrensaft: Absolutely.

What are your feelings on his work?

Dr. Ehrensaft: When I was both an undergraduate and a graduate student and I was studying gender, we all cut our teeth on his work. In fact, that's the theory that I was raised on. We learned that gender identity was socially learned, not biologically determined. Essentially, it was a developmental social constructionist model. Since core gender identity (I am male, I am female) is consolidated by the time a toddler reaches 24 months, we learned that if we catch kids before they turn 24 months, we can make them whatever gender we want. After that, it's not so easy.

What is strange in Money's writing, he often says the opposite of what he advocated in practice. It is puzzling why he would treat it as malleable when he strongly implied gender gets wired into the brain prenatally. His treating gender as malleable seems to have led to the critical error in suggesting gender reassignment in the Brenda case. Do you have any insights?

Dr. Ehrensaft: I don't know if you've read the book *The Riddle of Gender*. Because Deborah Rudacille discusses the issue in that book. She reviews the history of the gender work at Johns Hopkins and what happened with Money in terms of his evolution in the work he did. What I would say is that the work is not only contradictory, but it appears that Money fudged his data, most tragically in the treatment of David Reimer, who ultimately committed suicide years after John Money convinced his parents to raise him as a girl after a medical procedure at 8 months of age that destroyed his penis, an intervention that Money meant to use to prove the validity of his "get them before 24 months and you can change their gender."

What has been most disturbing is that Money presented David Reimer's case as evidence of the validity of his gender theory.

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Dr. Ehrensaft: You've raised a very good question about the discrepancy between his statements about the biological determinism of gender and his theory of social engineering of gender within the first 2 years.

Because what he writes in Gay, Straight, In-between and his books on gender is very much concordant with the evidence that gender determination in all primates and other mammals is prenatal. Would you agree?

Dr. Ehrensaft: Well, I would say that gender is everywhere.

I'm thinking about my model of the four-dimensional gender web. Each child weaves their own unique gender web from the threads of nature, nurture, and culture, over time. So time is the fourth dimension. In my plenary presentation at the American Psychological Association meetings in Toronto, I stated firmly that you can't collapse gender identity and gender expressions into one category. Yet everybody keeps doing that. Gender identity is how I know myself as male, female, and other. Gender expression is how we do our gender. So gender expressions are more performative and there can be an infinite number of combinations when you put those two together, gender identity and gender expressions. To make the point, I would use the example of myself over time. When I was a little girl I expressed my female self in a skirt. I hardly wear a skirt now, but I still identify as female. My female gender identity has remained the same, but my gender expressions have certainly changed over time, both in what I wear and I'm sure in many other domains as well.

So, nature and nurture, or biology and culture, are responsible?

Dr. Ehrensaft: When it comes to gender nonconformity, there are certainly genetic factors and constitutional factors, and even the earliest of environmental factors in the womb. For example, there are number of kids I see who are transgender or gender-nonconforming, and when I do a family history, there seem to be what would add up to a statistically significant number of these children who have been conceived with the help of some form of reproductive technology—fertility drugs, IVF, gamete donation, gestational surrogacy, which suggest there is something going on in those reproductive medical manipulations that may affect gender messages from the brain.

Getting to something tangential to gender is sexual preference. Do you think the same mechanisms that lead to gender differences lead to homosexuality?

Dr. Ehrensaft: I suspect, yes. Like gender, our sexual identity is certainly shaped in some ways by the environment. But the piston driving our gender identities and our sexual identities is primarily in the brain and constitutional. I say that as a mother of a gay son—as time rolled out, it was clear that he came to us that way.

What do you think about, and this is one that's still politically touchy, the people who are sexual criminals, paraphiles whose sexualities are still outlawed, maybe out of necessity? Do you think that paraphilic bondage discipline, pedophilia, do you think that the same mechanisms that lead to differences and other sexualities underlie those sexualities?

Dr. Ehrensaft: I think it's a good hypothesis that should be pursued more because I have to think that there's a possibility that there is brain loading on that.

I know because I'm trained psychoanalytically that if we take some of those issues you named, we can also trace some family history that might explain their development in terms of socialization, of trauma experiences, of early relational experiences that psychologically get fused to sexually stimulating urges. But at the same time, I think if we're going to ask a question about all aspects of sexuality and gender, I think we need to cast our net wide, and that includes considering genetic and constitutional components.

All right. So on a final note, would you have any advice to people who are feeling transgender? Parents of transgender children or for older transgender people coming of age?

Dr. Ehrensaft: My main piece of advice is as follows: First, follow the dictum that it's not for us to tell children who they are, but to listen and have them tell us who they are. The goal is to get that child's gender in focus. That may not happen in a moment in time, but it may take some extended exploration. Know that there is harm to be done and no virtue in holding somebody back from living their life as a person they know themselves to be. If it comes to an issue of the social context being a dangerous place for a child to live in their authentic gender, then you create layers and what I call a gender cloak: The cloak is the consciously constructed false gender self to keep yourself safe and alive in public. As long as you know internally that who you are is not that cloak and who you are is okay, but may have to be hidden from harm, you can hold on to your gender confidence and your gender resilience. I think sometimes parents go overboard in the direction of protecting their children from harm. They might say, "I know my child wants to wear dresses to school. He'll get beaten up every day, my boy, if he ever did that." But what if that little boy is actually a transgender girl, and the dress is an attempt to broadcast this loud and clear? Maybe the best protection that parent can give is acceptance of who their child is—a girl who likes dresses. What I am saying is that one of the key components of psychological protection is facilitating your child's gender confidence and resilience through acceptance. Then that child may be more psychologically protected by being able to say, "I can stand up for who I am and I know how to get support or aid if anybody starts to give me trouble about my gender. And the most important message for anybody, whatever age, if they are gender-nonconforming or transgender: If there are negative messages coming your way, don't internalize them, don't end up feeling that there is something wrong with you. See that there's something wrong with the people who think and act that way—they don't understand, they don't know, they're coming from ignorance, fear, and prejudice. They need to learn about gender acceptance, gender diversity, and gender infinity. Holding that message circles right back to internal resilience. It's what I called building gender resilience. And as gender expands from two boxes to infinity, queerness becomes not just individual psychology, but a social movement, which is happening right now. That social movement happens when you have a lot of people watching your back and you discover you are a lot of people.

Source: Abrams, M. (2015, August 18). Interview with Diane Ehrensaft. [Personal interview].

The fact that accomplished researchers/clinicians like Kenneth Zucker and Diane Ehrensaft propose such divergent views underscores the complexity and controversies in transgender science and psychology. Dr. Zucker sees gender

identity development as a fluid process and considers early encouragement a risky venture. To strongly encourage a burgeoning transgender identity risks tacitly forcing the child into a role that might have been a developmental phase. In contrast, Dr. Ehrensaft points to the risks of alienation and trauma faced by the transgender child during the transition process. She asserts that the risks to the child's developing psyche are greater than the risk of making the mistake of encouraging a child to remain in a transitional role. These two experts have debated these divergent views on transgender treatment for nearly a decade. What can be taken from the debate is that the science of gender identity deals with complex and subjective factors, many of which are still poorly understood. It is gratifying to know that people like Zucker and Ehrensaft are assiduously working to illuminate the field.

THE DEVELOPMENT OF SEXUAL BEHAVIOR

Even the most ardent critics of psychoanalytic theory frequently acknowledge that Freud was a highly accurate observer of human behavior. One of his observations was that children are sexual even before puberty. Freud (1920) described the child as having a polymorphous perverse sexual life. He stated that long before the maturation of the genitals, children express every variation of sexual behavior. This expression usually takes place in the form of play and is almost always harmless. Nevertheless, it is the manifestation of the primeval impulses that become focused in adult sexuality. Freud believed the multifaceted expressions of perversity arise as a result of the child's failure to complete his posited psychosexual stages. By extension, Freud viewed paraphilic behaviors as immature sexual behaviors.

Despite the fact that Freud's theory of sexual development was not based on empirical research and has never been definitively validated by science, it remains worthy of discussion for a few key reasons. First, it has infiltrated into many other theoretical models of the development of sexuality. Second, some of the observations have reasonable face validity. That is, they make sense to a reasonable observer. This, incidentally, is one of the many reasons why Freud remains a compelling force in all specialties in psychology and related fields (Batens & van Bendegen, 1988). Specifically, he was a cogent writer and a brilliant observer. His observations about social behavior, sexual motivations, and child development were generally accurate. However, he explained his observations via an arcane and complex set of theories (the source of many volumes of criticism).

The third reason that Freud's theories remain relevant is that many academics and clinicians accept them as fact. In particular, the five developmental stages posited by Freud have been widely accepted.

Each Freudian stage is characterized by the person's libidinal or sexual energy having a specific target. Accordingly, as a person progresses from stage to stage, his or her sexual energy is redirected from a less mature focus to a more socially mature one, from the mouth to the anus, for example.

Conflicts, inadequate satisfaction, or excessive pleasure—at any point during these stages—can lead to something called fixation, in which the target of the sexual energy remains attached to an object associated with a lower level of maturity. For example, a person might remain focused on the pleasures associated with the mouth. In this case, he or she is said to be orally fixated. It should be noted that Freud thought fixations could result from frustration as well as too much stimulation; thus, an oral fixation could result from being weaned too soon or from being allowed to nurse too long. Fixation is a critical aspect of psychosexual development, according to Freud (1905), as the nature of one's personality is based on one's preferred sexual focus. People with an oral fixation will tend to seek oral pleasures (food, smoking, alcoholic beverages, certain drugs); develop a dependent personality (like a suckling infant); and interact with others in a docile and submissive manner (also like an infant).

Oral Phase

The **oral phase** of development begins at birth; during this period the infant's erogenous region is the mouth. The sexual energy of the libido focuses on the mouth, and is, therefore, gratified by oral stimulation. This focus is also referred to as *cathexis*, a Freudian term referring to the emotional charge associated with the instinctual investment of psychic or libidinal energy into a part of the body or other instinctual object. One of the problems in understanding Freud is that while he wrote in German, using powerful and vivid terms, standard translators have translated those terms into Latin or Greek. This history of translation brings challenges when discerning the nuances of Freud's theory.

The word Freud used for *cathexis* in this stage was *Besetzung*, which in German means "sitting there" or "occupying." Infants in the oral stage are said to be in a state of autoerotic primary narcissism, in which all sexual energy is directed toward themselves. When libidinal energy is directed toward the mouth, the infant is concerned with obtaining gratification from oral stimulation. This gratification would ordinarily be satisfied by eating, sucking, biting, or swallowing. According to Freud, this stage shows the early expression of **eros**—the sexual and self-preserved instinct. Some psychoanalysts propose that biting or other acts of oral aggression are manifestations of what Freud called the **death instinct** or *thanatos*. The death instinct is the conjectured drive that impels us toward aggression and ultimately self-destruction. A child undergoing a period of oral aggression is considered by some Freudians as going through the oral-sadistic phase (Freud, 1905).

The oral stage shows the beginnings of identification, a mechanism that does not reach maturity until the child enters the phallic stage of development. During the process of identification, infants begin to take on the identity of (to identify with) significant others in their lives. This identification can include the mannerisms, dress styles, beliefs, or attitudes of other family members. This less mature behavioral style was considered by Freud to be a primitive variant of object cathexis or, in the latter stages, sexual energy that is directed toward a person rather than oneself. Freud saw the oral stage as the most narcissistic stage of human development, leaving those who fail to resolve it permanently immature and focused on themselves.

Anal Phase

The child who matures past the oral stage must complete the **anal stage** of development. As children progress from one stage to the next, so too does the focus of the libidinal energy. In the anal stage, the libido connects with the anus and activities associated with it. The control and release of feces is the source of the child's sexual pleasure during this phase of maturation.

The child's ability to control and respond to parental demands for bowel control is the key to the personality styles that can develop out of this stage (Freud, 1905). Prior to the anal stage, children's source of pleasure was located entirely within, but now, children must interact with outside entities—typically adults—who demand that they delay gratification. In the anal stage lies the beginning of the reality principle and secondary process thinking. And with the demands of the outside world to conform to the needs of reality, the ego begins to form outside the child's id.

Phallic Phase

During the **phallic phase**, which takes place between ages 4 and 6, genitals become the focus of libidinal energy or cathexis. Thus, activities involving the genitals, including self-stimulation and urination, are central to the child's erotic life. Urination is experienced as pleasurable, in both the expulsion and retention of urine. In the phallic period, the child's libidinal energy is directed toward the parent of the opposite sex. When children cathect the parent of the opposite sex, they become wary of their other parent, who is now seen as a competitor.

Freud saw this conflict as comparable to that of Oedipus, a tragic hero in Greek legend. According to the legend, King Laius of Thebes was warned by an oracle that he would be killed by his own son. When his wife, Jocasta, gave birth to a boy, Laius ordered the baby to be bound by his ankles and exposed to the elements. A shepherd found the infant and saved him from death, and the child was adopted by King Polybus of Corinth. As a young prince, Oedipus visited the same oracle as his father. The oracle told him that he was fated to kill his father and marry his mother.

On hearing this, he fled from his home to avoid his fate. He traveled to Thebes, where he came upon King Laius, who challenged him. Oedipus killed him in combat and eventually won the throne of Thebes. He married Jocasta, the queen—thus fulfilling the prophecy that he would kill his father and marry his mother.

Freud concluded that the myth of Oedipus was an expression of a developmental impulse found in all children. He believed that children fantasize about eliminating the parent of the same sex so that they can have sexual union with the parent of the opposite sex. This desire leads to an epiphany in a male child, namely that his father will take revenge on his offspring-competitor by castrating him. This fear is what Freud called castration anxiety. The growing dread of impending castration forces the boy to give up competing with his father and instead begin identifying with him. By doing so, the little boy can achieve his goal vicariously. The boy's allying with his father leads to introjection of his father's moral and motivational values, the foundation of the boy's superego. In contrast, Freud did not think that this path of development was applicable to girls. He saw girls as unable to experience castration anxiety; as a result, girls are far less motivated to give up their quest for the parent of the opposite sex and introject the values of the same-sex parent.

Freud theorized that children do not recognize the external anatomical differences between males and females prior to the phallic phase. In the phallic stage, however, the girl often takes her mother as the focus of libidinal energy. She will then compete with her father in the goal of impregnating her mother. With the formation of this goal, the girl becomes painfully aware of her lack of a penis to accomplish this task, thereby experiencing penis envy. Freud suggested that girls make temporary adjustments to this discomfort through fantasies about acquiring or reacquiring a penis. Eventually, the girl will acknowledge defeat. She then blames her mother for her deficiency and turns to her father with the fantasy of obtaining a penis from him, which is later replaced by the wish to receive a child from him. Because Freud believed that satisfactory completion of the phallic stage through the resolution of castration anxiety is required for the proper development of the superego, it follows that he believed women were anatomically destined to have weaker moral values and ethical convictions than men. Freud states that the girl's clitoris behaves at first just like a penis, but by comparing herself with a male sibling or playfellow, the female child perceives that she has "come off short" and takes this fact as a proof of ill treatment and as a reason for feeling inferior. Moreover, because women never completely resolve their penis envy according to Freud, they are left feeling inadequate, less mature, and less capable of sublimating their impulses.

Here, Freud's account of female psychosexual development becomes far more shadowy and incomplete. In his system, females also develop an Oedipus complex and a superego and pass through a latency period. As to whether girls can be ascribed to a phallic organization and a castration complex, Freud's answer is a

definitive yes, although he believed them to be expressed differently between girls and boys. Freud thought that the morphological differences between males and females must express themselves in differences in the development of the mind. Freud is frequently quoted as saying that “anatomy is destiny.”

Latency

Between the 6th and the 12th year, the libidinal or sexual forces are held in abeyance or sublimated through such other activities as sports and schoolwork. The Oedipal conflicts are repressed in this stage as children are approaching adulthood. Children are, however, becoming concerned with independence from their parents. According to Freud, children in the **latency phase** are beginning to learn to use sublimation to divert sexual impulses toward socially acceptable and constructive directions. When the more primitive sexual impulses are repressed, children learn to replace them with affection.

Children at this age may take a great interest in pets or farm animals as well as socializing and playing with other youngsters. These activities become more complex during this period. Freud proposed that the defense mechanism of identification emerges during this period so that children will seek out others who are similar to them. Identification is the reason why young boys will tend to seek out male companions and girls will seek out other females.

Genital Phase

The **genital phase** begins when children enter puberty, at which point reproduction is now possible. Physical sexuality becomes a strong force at this time of life, and the symbolic dimension of sexuality becomes less significant. Freud believed that the available libido increases during puberty with the surge of sex hormones in the young person. He predicted a range of psychic manifestations given the conflicts and demands of young adulthood. For example, Freud explained the social sensitivity of young adults as libidinal sublimation and their rebelliousness as expressions of *thanatos* or the death instinct.

The latter portion of the genital phase is associated with adulthood. At this point, mature adults can express their sexuality through procreative heterosexual intercourse. The healthy genital stage is associated with a high degree of maturity. Fixations from prior stages are minimal, though Freud considered homosexuality to be a permanent pathology associated with inadequate completion of the phallic stage. In this stage, people can have a satisfying sexual life and combine sexual gratification with genuine affection for others. They exhibit little or no infantile narcissism and use the defense mechanism of sublimation to redirect libidinal energy toward productive work and socially acceptable endeavors.

Having presented Freud's enduring model of sexual development, I think it is important to clarify that its only significance is that so many sex researchers and clinicians still give credence to its legitimacy. Ellis, Abrams, and Abrams (2008) comprehensively summarized the research showing that Freud's theories remain completely unsupported. Psychodynamic or psychoanalytic models not only continue to guide thinking, but also clinical treatment of sexual problems. An instrumental aspect of Freudian-derived treatments is the recovery of lost or repressed memories. People with sexual conflicts, when seeking treatment from therapists who are Freudian in orientation, will typically be encouraged to review their developmental history. This process can sometimes span over the entire therapy process as the client is encouraged to recount the exact events that may have disrupted a key developmental phase—such as the psychosexual stages presented above. The fundamental problem with this approach is that autobiographical memory is astonishingly unreliable. And if people's memories are not reliable, it readily follows that therapeutic interventions based on the recovery of lost or repressed memories also cannot be reliable.

Below is an interview with Dr. Elizabeth Loftus, one of the most renowned memory researchers of the past generation. Although the application of her work has mostly focused on the role of memory in forensic psychology, it readily extends to the clinical realm. She has demonstrated that recovered memories of abuse are essentially a myth, that recall of even critical life events are colored by the context in which they are recalled, and that memory can readily be manipulated by those asking the questions.

Interview With Dr. Elizabeth Loftus



Portrait of Elizabeth Loftus. Illustration by Emrazina I. Prithwa © 2015.

Elizabeth F. Loftus (1944–) is an American research psychologist and distinguished professor at the University of California, Irvine. Dr. Loftus is an expert on human memory and is famous for her work on the misinformation effect, eyewitness memory, and false memories. Since Dr. Loftus discovered many faults of our memory, she became a sought-after legal expert, providing forensic testimony and consultation in high-profile cases. She has received numerous awards and honorary degrees for her work and was declared the 58th most influential psychology researcher of the 20th century. Her numerous books include *Mind at Play*, *Eyewitness Testimony—Civil and Criminal*, and *The Myth of Repressed Memory*. Her expertise on memory and her position on emotional repression

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are relevant to this chapter, particularly the sections on psychoanalysis, a theoretical framework that continues to influence the field of psychology today. Her work suggests that emotional repression may be more of an artifact of the therapist or other actors who are interviewing a patient or victim on past experiences.

Dr. Loftus argues that many recollections, or repressions of violent acts, may be influenced by the interviewer. Her interview is particularly relevant after the discussion of psychoanalytic theory. The preponderance of psychoanalysis' claimed efficacy is either in the recovery of lost memories or the linking of early memories with extant neurotic symptoms. Much of Loftus's compelling research is on the reliability of memory. Her talent for the design of experiments that lay bare the mechanisms of memory creation, manipulation, and retrieval is unparalleled. Dr. Loftus has demonstrated that human memory is not at all like a recording. Instead, it is a conceptual representation. We store the gist of things; and this gist is biased by our values, expectations, and context. Her research raises the question of the validity of psychoanalysis: If memory is subjective and unreliable, how can it be the intrinsic basis of a psychotherapeutic approach? Interestingly, exposure-based, and cognitive, therapies are predicated on principles very compatible to Dr. Loftus's findings. That is, if a memory is causing distress, either change the nature of memory, or change the response to the memory.

Please give an overview of your research, of what's most important to you in your research in memory and reliability of memory variability and malleability.

Dr. Loftus: I would say that really in my career, I was basically showing people simulated crimes and simulated accidents and studying their memories for the details of these events. And I found that by asking leading questions or supplying people with post-event information, you could alter people's memories for the details of events that they actually did witness. And then later, we went even further and showed that you could not only change memory for the details of an event, but you could also plant entirely false memories into the minds of people. And I think that this body of work, done not only by me but many others who contribute to this line of research, teaches us a great deal about the malleable nature of our memory.

So it's well-known how much you've contributed to both forensic psychology and then in courts, even the New Jersey Supreme Court . . . what would you say, and including the cases you've worked on, is a particular malleability or alterability of sexual memories, especially of early childhood sexual events?

Dr. Loftus: Early when I was doing my initial experiments, I was thinking more about police interrogations and the construction of police lineups and how even inadvertent suggestion on the part of police who were doing interviewing could change what people remember. I wasn't necessarily thinking about remembering things that are sexual. I mean, the witnesses either in my experiments or in the actual cases that I would work on were trying to remember events like shootings or auto accidents or other kinds of events.

It was really later when there began to be these claims of repressed memory—people who are claiming that they had absolutely no memory of any sexual abuse until they went into therapy for some other problem and ended up sometimes with memory for years of sexual brutalization

supposedly committed upon them by relatives or former neighbors or former individuals in their life. When I started looking into these cases, I would see that an extraordinary number of them involve psychotherapy and often psychotherapy that was highly suggestive. So I began to worry about this suggestive psychotherapy and worry that it might be leading these patients to sometimes develop memories of things that were pretty implausible.

So let's go to the paradigm of that type of psychotherapy, either psychoanalytic or psychodynamic. I'm sure you're familiar . . .

Dr. Loftus: Yes.

If you repress, as you say—if repressed memories are malleable and inaccurate, what does that say about the whole premise of repression psychoanalysis?

Dr. Loftus: I really would like to see one solid clinical trial that shows that digging out allegedly repressed memories of childhood sexual abuse helps people get better. I've never seen such a study. I think that a therapy that is totally focused on assuming that the patients' current problems are due to repressed memories of sexual abuse and then engaging in practices that try to unearth these allegedly buried trauma memories . . . it's risky, it's even dangerous because these techniques can lead people to develop false memories that can have horrible ramifications for the patient and their extended family and others around them.

Since many psychoanalytic statements, Freud's included, claim that almost all psychological problems stem from these childhood sexual traumas, would you say that in the light of your research this becomes at best problematic?

Dr. Loftus: Right. Just show me the evidence. I'll tell you, people have tried to provide good solid empirical support for the illicit idea of massive repression. Repression is supposed to involve some kind of process that is too extreme to be explained by ordinary forgetting and remembering. But I don't see any solid credible scientific support for this.

Let's look at memory from a different perspective. If memory is altered and we look at people's self-image and self-esteem, how would you say a person's personality style might affect their retrieval, their memory, their autobiography, or their self-constructed autobiography?

Dr. Loftus: Well, I don't know too much about that. We have looked at how personality might be related to memory. We've looked at individual differences in who is more or less susceptible to having their memories be contaminated. And so there is some work showing that if you're somewhat low in cognitive ability but a particularly cooperative person, you might be more susceptible to memory contamination.

There's other work out there that shows that if you have a subject who is an introvert and then an experimenter who is an extrovert, and the experimenter is the one supplying post-event information, then people are especially susceptible with that kind of combination of introvert and extrovert.

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Which might indeed happen in psychotherapeutic encounters?

Dr. Loftus: Well, yeah. I mean again, when you want to think about a therapy situation where you've got an authority figure namely as a therapist and a vulnerable patient who wants an explanation for problems, you might have a situation that's kind of ripe for influence.

So then let's go back to repressed memories. What is your take on what happens to early childhood memories if indeed they're not repressed? How do people recall these traumas?

Dr. Loftus: Richard McNally, the experimental clinical researcher, would probably say that most people do remember traumatic experiences that happened to them, and if they end up being pretty traumatized to the point of something like PTSD [posttraumatic stress disorder], they have the problem of not being able to stop remembering. They have intrusive memories that are painful and debilitating.

So in fact, it's never repressed or virtually never.

Dr. Loftus: People can forget things, and they cannot think about things for a long time and be reminded of them.

And that's a different process.

Dr. Loftus: A different process. I'd call that ordinary forgetting and remembering.

Let me just go to a related area—you're a legal scholar, an experimental psychologist, and social psychologist, but you have a little bit of experience in the clinical area. What of the psychotherapies that you've read about do you think would be most appropriate for people who have been sexually traumatized and have strong histories, I guess memorably based?

Dr. Loftus: Generally, when I write about that kind of advice for therapists, I might do it with a real therapist.

I as an experimental psychologist am not telling other people what to do. So I have coauthored a number of papers with people who are the clinicians, and I certainly think that there is value in talking about upsetting things that have happened to you. Take the work Edna Foa has done, where you take, for example, people who were recently raped and put them in a group together where they can share their experiences; they can feel less alone, they can provide comfort and empathy and sympathy for each other. And maybe, when they tell their stories in the safe environment, they can habituate so that the emotion eventually associated with the telling of the story is reduced. And that to me seems like a sensible idea just in terms of what we know about extinction.

So basic exposure therapy and maybe cognitive therapies to add to it by changing the thinking now?

Dr. Loftus: Right. Right. But the kind of situation I've been objecting to is the one in which the therapist is imposing one and only one theory about what's wrong with the patient and engaging in practices that end up even inadvertently leading these patients down a wrong track.

And moving to people events other than therapists, it's my interpretation of your work and other researchers who have followed you is that the active retrieval—retrieval itself—changes the memory each time it's retrieved and restored. In terms of autobiographical memories for sexual or other potentially traumatizing events, would you feel life events will continually alter these memories?

Dr. Loftus: It's certainly possible because when you retrieve a memory and tell it to a particular person or audience, there's a phenomenon called "audience tuning." People will often adjust their memory story to the audience that they're talking to, and in telling this adjusted or somewhat altered story to a different audience, you can actually change the story and change what it is you remember. So I don't know if that happens each and every single time because sometimes, you're just telling a similar story to a similar audience. I guess that's all I have to say really. Yeah, we do believe that memory is reconstructive, and when you tell a story today, you're constructing it in light of your current thoughts and your experiences and your audience.

If you were to give advice to clinicians who spend a great deal of time taking clients' histories and autobiographies, given your work on the malleability and on reliability of memory, what advice would you give to therapists who spend a great deal of time taking a history prior to treatment, even if it's a gut feel?

Dr. Loftus: The one take-home message that I'd like to leave my audiences in talks that I give is this: "Just because somebody tells you something with a lot of detail and a lot of confidence and a lot of emotion—they cry when they tell you, it doesn't mean it really happened. That false memories can have those same characteristics." And so you can't know without independent corroboration, whether you're dealing with a memory that is genuine or a memory that is a product of some other process—imagination or dreams or inferences or some other process.

What general advice, even if you've covered some of it, would you give to therapists who are treating people with sexual disorders, sexual traumas, sexual events—what cautions and warnings would you give in general?

Dr. Loftus: Well I guess I would say in addition to, just because it's detailed, confident, and emotional, it doesn't mean it really happened, which is my number one kind of lesson that I've learned through all these decades of doing this research on memory distortion; is just be open to an alternative hypothesis or what might be wrong with this patient and not focused on one single hypothesis and engage in practices that are designed at whatever cost to provide support for that single hypothesis.

Wonderful. So therapy should be like any other science—accepting hypothesis and being willing to have competing hypotheses.

Dr. Loftus: Exactly, that's well put.

Source: Abrams, M. (2015, August 30). Interview with Elizabeth Loftus. [Personal interview].

Loftus's research raises profound questions about the legitimacy of the numerous cases of recovered memories of sexual abuse. In cases in which Loftus served as an expert witness, it was usually concluded that even memories of recent sexual abuse victims had been shaped by the questions of investigators. Clearly, people are indeed sexually abused, and such abuse can result in profound harm. However, it is also a grievous social harm to imprison and permanently stigmatize an alleged abuser based on a memory that may have been altered.

Her work is also deeply relevant for those practicing sex therapies predicated on exploring the autobiographical memory of those in treatment. Evidently our memories of events that may seem most explanatory of our current shortcomings may be the most unreliable. Loftus has shown that memory is malleable, and the factors that can alter these memories are strong emotions. Thus the fact that the memory is associated with current distress increases the chances that the memory is far less accurate than the person's intuition indicates.

THE MATURATION OF SEXUAL BEHAVIOR

A common source of parental concern is the sexual behavior of one's child. Many psychotherapists, school counselors, and pediatricians are sought out to help with a child judged to be sexually precocious. Even more problematic are the children treated as junior sex offenders in schools or preschools that have adopted "zero tolerance" policies for sexually aberrant behavior. In some cases, sexual or quasi-sexual behavior can be the basis of punitive or restrictive actions by teachers, day-care workers, or other parents.

In one case, a 4-year-old boy became a social outcast because he showed two female peers his penis. The parents of the young girls were accusatory toward the parents of the boy, with one parent hinting that some inappropriate behavior must be taking place at his home. This parent, and many others in this situation, commonly assumed that such sexual acts or gestures made by a child are imitative of or responses to exposure to an adult exhibiting inappropriate sexual behavior (Hornor, 2004). This common false alarm is triggered by ignorance of the polymorphous perverse sexuality Freud observed in children a century ago. What Freud called the id is actually the unshaped and largely instinctual impulses that will ultimately be honed by culture, learning, and norms.

Many of the sexual actions that have led to harsh punishment are quite normal. In modern Western culture, along with other cultures, sexual mores are conflated with sexually normal or sexually healthy behaviors (see discussion of the legalistic approach to sexuality in Chapter 5). Thus sexual desires or urges are considered aberrations. The reality that sex permeates almost every aspect of human intercourse is frequently offensive or threatening to many informed and enlightened adults.

The idea that children can be sexual is contrary to the idealized view of childhood held by many people, although numerous professional studies indicate that, like all human development, sexual development begins at birth (American Academy of Pediatrics, 2005; Friedrich, Grambsch, Broughton, Kuiper, & Beilke, 1991; Friedrich et al., 1998; Hagan, Shaw, & Duncan, 2008; Hornor, 2004; Kellogg, 2009). People prefer to think of childhood as a time of innocence and moral purity. Therefore, lust and other vices are attributes that must be aroused in children through noxious learning. People who adopt this view of human development see children in very much the same way that the behaviorists did.

Children, according to both the idealized and behaviorist perspective, are morally pure and free of any lewd or libidinous motives. Perhaps children are morally pure, but they are sexual beings. Their sexuality is inchoate and not goal-directed; that is, they are not seeking to copulate or procreate. However, they do exhibit many behaviors that appear to derive from essential impulses that will mature into adult sexual activities. Human infants, like the young of almost all species, are endowed with the templates for many capacities that are essential for survival. In phylogenetically older species, the young enter the world with a near-complete set of faculties necessary for survival. A nascent insect does not have to be taught what to eat nor how to find food. Nor does the insect need to learn how to avoid those that would eat it. Similarly, an insect does not need any type of instruction about sex. It is born with every sexual skill intact.

As animals move up the phylogenetic scale with increasingly large brains, their instinctual behaviors are progressively moderated by personal experience or even cultural learning. From a teleological perspective, the purpose of a large brain is to rely less on innate behaviors and to depend more on the capacity to apply knowledge based on experience and learning. However, despite the large brains and neocortex of human beings, there is a great deal of evidence that the plurality of human behavior is guided by innate tendencies, many of which are shaped by sex hormones. Androgens and estrogens not only influence people's behaviors and attitudes, but they also play a role in structurally shaping the brain. A significant portion of this shaping occurs in the womb and will guide behavior throughout a person's life. The case of Nando illustrates this.

The Case of Nando

Nando Esposito was very masculine in appearance but somewhat short and slender. He was seeking counseling at the insistence of his wife for almost incessant rage attacks. Nando would verbally attack his wife with the most trivial provocations. He would also have near-violent conflicts at his job as a forklift operator. His marriage was only maintained as a result of his wife's great love for him and her patient demeanor. With other men, when not overtly aggressive, Nando was passive-aggressive, and

was generally treated poorly by coworkers because of this trait. Unfortunately, he did not see the connection between his peers' treatment of him and his contentious behavior. Paradoxically, his coworkers' treatment in kind only served to make him feel victimized. Exacerbating his disturbed social functioning was acute hypochondriasis. In the two-year period prior to his seeking psychological help, he had been out of work for nearly 6 months. These absences included four hospital stays and three minor surgeries. Whenever his anxiety or frustrated rage would reach untenable proportions, he would begin to ruminate about a physical deficiency. And once getting the ear of a physician, he would compellingly argue for a hospital stay and maximal treatment. He was so insistent on being sick that he would often obtain medical interventions, even when physicians initially asserted that he was not sick. His wife noted that if he were to receive medical care for everything he complained of, his entire body would have to be rebuilt.

And Nando's loathing of his body seemed to be the locus of his misery. Nando was born with hypospadias. His penis was not properly formed, having developed with a large urethral opening on the underside of the penile shaft. Nando's mother was uneducated, quite indifferent to her five children, and completely ignored his condition. He was left untreated until shortly before adolescence, when a county physician reported his mother to the child protective services agency. Nando finally received corrective surgery, but the delay came with a big cost; his penis was abnormally small and ill-shaped. He would later learn that had it been treated early in life, his penis would have fared far better. In some situations, a young man with such a developmental defect might still have a healthy emotional development. But the males in his extended family, including his older brothers, seemed to make it their avocation to cause him as much consternation as possible. While maturing, Nando was continually tormented with the notion that he was a broken and inferior person. They ridiculed and mocked his abnormal penis, leading him to feel tremendously ashamed and inferior. Offsetting Nando's adversity was an innate inner drive to fight back. But he was never clear against whom he should be fighting. His frustrated rage led him to become an angry and bitter man. In addition, the feeling that he was defective, along with his incessant strong negative emotions, led to an obsession about his health. It was as if he were waiting for other parts of his body to fail him. Nando received over a year of Rational Emotive Behavior Therapy for his hostility, self-loathing, and health obsessions. Unfortunately, his essential nature remained the same despite some improvement with his rage and hypochondriasis. He was helped to see that the rage was targeted against the wrong people, and to see that even if he could rage against those that hurt him, it would not make things better. Nando surprised this author with an insight: "being angry at people is like pissing at them with my pants on—I'm the only one that gets wet." Nando improved for a while, until being assigned to a boss that he felt was treating him unfairly. His rage gradually began to worsen despite improvements in his marriage, as he and his wife became closer and adopted a child. Unfortunately, his rage began to beget new symptoms, and there were too many physicians willing to treat him for his vague and changing complaints. He left work on permanent medical disability—for leg and joint problems. A contact with him a year later confirmed that he was doing better, having become a man isolated by his illnesses.

DEVELOPMENTAL ABNORMALITIES

The behavioral or learning perspective of sexuality has been largely based on the theories of John Watson (1919, 1925), B. F. Skinner (1974), Albert Bandura (1977), and Ivan Pavlov (1928). Both Skinner and Watson viewed sexual arousal as

a learned response that required a direct reinforcement for continuation. However, evidence shows that males and females behave differently from the earliest age and in ways that cannot be explained by learning, reinforcement, subtle behavioral cues, or culture. An understanding of the relationship between sex hormones and the brain helps to explain this behavior. This relationship is especially clear when seen in the context of sexual characteristics caused by hormonal abnormalities.

According to Ramachandran (2011), normal or ordinary developmental process means that different aspects of sexuality arise and further develop in accordance—sexual morphology, identity, orientation, and body image all grow together and create normal sexuality. However, sexual development is not the same for everyone—many things can go wrong, from nature to nurture. Here are some examples of atypical sexual development that leads to unusual sexuality.

Congenital Adrenal Hyperplasia

An example of the hormone–brain relationship is seen in a condition called congenital adrenal hyperplasia (CAH). In normal functioning, the *CYP21* gene, which is found on an autosome (a chromosome other than the X or Y), produces a protein that converts the hormone progesterone to cortisol (the stress hormone) in the adrenal glands. However, in CAH, the gene is either absent or impaired. Thus the process of conversion fails to occur, leading to an accumulation of progesterone, which is a precursor to androgens such as testosterone. Consequently, during the first trimester of fetal development, the hormonal milieu begins to change. The lower the activity of the *CYP21* gene, the greater the production of prenatal androgens, causing the fetus to have a more masculine body. In contrast, when the activity of the gene is higher, the fetus has a more feminine body.

This condition has effectively become a natural experiment in the role of hormones in the development of the child’s brain. The question raised by this disorder is, Do girls exposed to higher than normal levels of androgens express more traditionally masculine behaviors? If so, is this difference a result of structural changes to their brains? The answer to these questions based on all available data is yes, which is a rebuttal to those who assert that the divergent conduct of males and females is solely the product of acculturation.

The androgen exposure causes partial to complete masculinization of the external genitalia in utero, and the masculinized genitalia in the newborn female typically leads to diagnosis within days of birth. Postnatal androgen levels are regulated by hormone treatment, and the external genitalia are surgically feminized, usually in infancy. Despite postnatal treatment, girls with CAH show altered play behavior (see Berenbaum & Hines, 1992; Hines et al., 2002). They are more likely than other girls to favor toys that are normally preferred by boys (e.g., cars and building blocks) and less likely to prefer “girl” toys (e.g., dolls). They also show increased

preferences for boys as playmates and for boy-typical activities. Researchers also found that CAH girls are more likely to engage in aggressive behavior (Pasterski et al., 2011). This was not the case for boys, in whom additional androgen had minimal effect on development. These differences in play behavior are seen on questionnaires, in interviews, and in direct observation of toy choices. They also are seen when girls with CAH are compared to unaffected female relatives as well as to controls matched for background factors like age and parental socioeconomic status. Similar outcomes have been seen in girls exposed to high levels of androgenic hormones prenatally because their mothers were prescribed hormones during pregnancy (Ehrhardt & Money, 1967).

In addition, normal variability in maternal testosterone levels during pregnancy has been found to relate positively to male-typical play behavior in female offspring at the age of 3-1/2 years (Hines et al., 2002). Similar results were obtained when comparing 40 girls and 29 boys with CAH to 29 girls and 30 boys unaffected by the syndrome. The girls with CAH were rated as being less tender-minded than the normative controls. The CAH females exhibited a significantly greater tendency toward physical aggression and less interest in infants. Males with CAH were significantly less dominant than males unaffected by CAH (Mathews, Fane, Conway, Brook, & Hines, 2009).

In one study of the effect of CAH on gender behavior (Hines, Brook, & Conway, 2004), researchers assessed core gender identity, sexual orientation, and recalled childhood gender role behavior in 16 women and 9 men with CAH and in 15 unaffected female and 10 unaffected male relatives between the ages of 18 and 44 years. Women with CAH recalled participating in more male-typical games and behaviors when compared with unaffected women; there were no reported differences among the men. The women with CAH reported feeling less comfortable with the female gender role and stated that they had less of an assignment and less heterosexual interest than unaffected women. There was no such difference noted in the men. In addition, Hines et al. provide initial evidence that core gender identity and sexual orientation are unaffected in men with CAH.

In another CAH study, researchers examined the effect that prenatal hormones have on adult gender behaviors (Resnick, Berenbaum, Gottesman, & Bouchard, 1986), 17 females and 8 males with CAH were given a cognitive test battery that emphasized spatial ability, verbal fluency, and perceptual speed, contrasting them with 13 unaffected female relatives and 14 unaffected male relatives. The results revealed that the CAH females performed significantly better on hidden pattern detection, card rotation, and mental rotation tasks than unaffected females. In contrast, the CAH females performed more poorly on tests of verbal expression. These findings were supported in a study of 22 CAH women who showed a verbal disadvantage relative to a control group (Helleday, Bartfai, Ritzén, & Forsman, 1994).

The researchers (Helleday et al., 1994) concluded that CAH women develop a more masculine cognitive pattern (better spatial abilities than verbal abilities) due to exposure to the high level of prenatal androgen. The CAH boys did not differ from their unaffected relatives on any of the cognitive or behavioral measures.

Why so many studies of CAH? CAH has served as a natural experiment in the role of hormones in gender and sex-specific behavior. It offers a relatively unbiased way to scrutinize the long-held behavioral notion that gender roles are completely learned. In CAH, we find a genetic/biological phenomenon that results in profound effects on adult gender roles that is not associated with social learning. This condition may serve as an example of genetic-environmental interaction. Specifically, people are born with certain temperamental and activity-level predispositions, which influence the experiences that they will selectively choose. Recall that for most of the 20th century, when behaviorism was dominant in the United States, it was unquestioned that sex roles were learned. Humanists forcefully adopted this behavioral perspective and viewed genetic or biological explanations of human behavior as just short of bigotry (Ellis, Abrams, & Abrams, 2008). The behavior of women with CAH serves as a forceful rebuttal to this view.

Dominican Republic Syndrome

Although this syndrome is not unique to the Dominican Republic, it has occurred there with sufficient incidence to be given this name. Julianne Imperato and her colleagues conducted a study of men who are referred to as *guevedoces*, a term for eggs and local slang for “testicles at 12” (Kessler & McKenna, 1978; Roughgarden, 2004). Simply put, males with this condition do not have visible genitals until puberty. During childhood, their appearance is indistinguishable from that of girls, and therefore they are raised as such (Imperato-McGinley, Guerrero, Gautier, & Peterson, 1974). The *guevedoces* (or *guevedoches*) are pseudohermaphrodites. That is, they are males who appear to have female genitals, but actually have undeveloped male genitals that develop fully at puberty.

This curiosity results from a 5 α -reductase enzyme deficiency (5-ARD). This hormone is essential for converting testosterone to dihydrotestosterone (DHT). Both testosterone and DHT are essential in the development of primary and secondary sexual features in males. Testosterone is critical for the conversion of the Wolffian ducts to internal male gonads, including the growth of the seminal vesicle, vas deferens, and epididymis. DHT is the key agent in the maturation of the penis, prostate, and the testicles. Absent DHT, the boy will have what appears to be a vaginal cleft, a clitoris-sized penis, and undescended testicles. Their lack of a vulva and the fact that they urinate through their clitoris are usually not noticed. At puberty, the penis and the scrotum enlarge, the testicles descend, muscular growth

ensues, and these young men develop a male physique with widened shoulders and increased muscle mass. However, they do not experience prostate maturation, growth of facial hair, and the male hairline recession, all of which are mediated by DHT.

A similar syndrome occurs in the development of young men in Papua, New Guinea (Imperato-McGinley et al., 1991). These males are born with undeveloped clitoris-like penises and pseudovaginas. Just like in the Dominican *guevedoces*, their penis enlarges during puberty, along with the development of secondary sexual features, including marked muscular growth. The New Guinea hermaphrodites tend to develop more facial hair than the Dominicans, but less than typical young men in that region. Imperato-McGinley et al. (1991) report that the pseudohermaphrodites, while appearing to be girls, are raised in accordance with the strict gender role separation that is traditional in that society. However, when they develop into males at puberty, they transition to that culture's clearly defined role of a young man. Imperato-McGinley et al. state that this process involves a relatively smooth transition from a female identity to a male identity. They observed that 18 of the 38 *guevedoces* in New Guinea were unequivocally raised as girls and shortly after puberty, 17 of the 18 adopted a male gender identity and assumed a male gender role. Imperato-McGinley consequently concluded that in utero, levels of testosterone normal for a male fetus are both necessary and sufficient to develop male gender identity. Importantly, the effect of testosterone on the brain exceeded that strong sociocultural force of being raised as girl (Imperato-McGinley, Peterson, Gautier, & Sturla, 1979).

Researcher Rebecca Jordan-Young (2010) challenged the commonly accepted interpretation of the gender transition of the New Guinean *guevedoces* as a fluid change from fully female to fully male. She opines that they are a distinct gender category and in infancy are not considered normal girls. After they develop male genitals and muscularity, they once again enter a distinct gender category. Since approximately 2% of males in the affected portion of the Dominican Republic are *guevedoces*, they are noticed as different, but their number leads to acceptance (Imperato-McGinley et al., 1979).

The studies of pseudohermaphroditism in the Dominican Republic and New Guinea shed light on the biological and social influences on how individuals with this condition experience sexuality across their lifetime. Without the presence of DHT, the sexual organs of individuals are underdeveloped and resemble the female anatomy. Children with this disorder are generally treated as and assume the role of the sex for which they share the most dominant characteristics—the female. After puberty, when masculinization occurs and male sex organs become more prominent, the individuals and members of society accept them as males, and they subsequently take on male gender roles.

Androgen Insensitivity Syndrome

The exquisitely important role that hormones play in shaping sexuality is also seen in a genetic condition called androgen insensitivity syndrome (AIS). The afflicted individual is insensitive to the male hormones produced by his or her own body. The body produces the male hormones adequate to masculinize the child, but the cells fail to respond to the hormones.

People with AIS have a defect in the androgen receptors in their cells. The *SRY* gene on the Y chromosome initiates changes in the developing sex organs, transforming them from female to male. Specifically, the unstructured gonads are converted to testes, leading to the production of testosterone. But the action of *SRY* is attenuated by a gene on the X chromosome at locus Xq11-12 that produces testosterone receptors. This gene has 150 known alleles that are responsible for the impact testosterone has on the body and for its masculinization. In cases of AIS, a mutation in this androgen receptor gene leads to extremely reduced binding of receptors to testosterone, resulting in the feminization of a person's body despite a full complement of X and Y chromosomes.

There are three categories of AIS. Complete AIS is defined as a genetic disease, because, among other manifestations, it has a strong impact on fertility. It is characterized by complete insensitivity to all male hormones. The person with this degree of the condition will appear female and will develop breasts and a vagina, and in most cases will develop into a normal woman. In cases of partial AIS, both feminine and masculine features are present, which causes ambiguous sex classification at birth. Persons with mild AIS have mainly masculine features and are correctly characterized as male at birth, but later develop some feminine features.

Partial and mild AIS are not considered to be genetic disorders, but rather variations that have some nondamaging impact on body development. Milder forms of AIS can be seen as fine-tuning sexual dimorphism, with many variations being normal and even adaptive in some cultures. Complete AIS has a similar prevalence as CAH (1 in about 13,000) and can be defined as a complementary disease to CAH. Partial and mild forms of AIS appear to be much more rare, although the reason for this apparent rarity may be that they are more difficult to diagnose.

The research on 5 α -reductase enzyme deficiency and androgen insensitivity syndrome have provided critical information on how hormones and the body's ability to metabolize them correctly influence the physiological development of sexuality. AIS is one of many ways in which individuals can fail to develop sexually. Individuals with the most profound AIS generally identify as female. This observation, along with many others, suggests that brain development plays a strong role in both gender identification and sexual orientation.

Biological Influences on Homosexuality

The studies on pseudohermaphroditism shed light on individuals that may be physiologically and socially sexually ambiguous, and they are relevant to understanding the role of biology in sexual orientation. While the evidence strongly supports that sexual preference has a heritable component, environment and life events also play a role in how individuals engage in sexuality (Barash, 2012). If sexuality were purely an inherited trait, virtually all monozygotic twins would share the same sexual identity and preference, which is not the case, as shown in Table 6.1, which sets forth frequently cited studies of sexual concordance.

Table 6.1 is typical of studies finding a high heritability of homosexuality. For example, a more recent twin study measured heritability at 62% (Kendler, Thornton, Gilman, & Kessler, 2000). Clearly, like all human characteristics, sexual orientation has a genetic basis but is not solely determined by genes. The human genome interacts with environmental events and changes in response. Importantly, critics of these studies point out that sexuality, hetero- or homo-, is not a unitary construct and needs to be considered when measuring concordance of sexual orientation. Michael Bailey, a contributor to two of the studies set forth above, responded to some of his critics with a lengthy study in which 4,901 twins were recruited from the Australian National Health and Medical Research Council Twin Register (Bailey, Dunne, & Martin, 2000), in which factors such as gender nonconformity, shared environment, and degree of orientation as measured by the Kinsey scale were taken into account. In this study, the concordance of homosexuality remained largely consistent with prior studies, with 51% of male and 49% of female monozygotic twins being concordant for homosexuality. Bailey and his coworkers also found that 54% of male and 42% of female monozygotic twins were concordant for childhood gender nonconformity.

More recent research suggests that genes do not influence homosexuality; rather, it is influenced by epigenetic marks, or “epi-marks,” (Rice, Friberg, & Gavrilets, 2012; Rice, Friberg, & Gavrilets, 2013). Epi-marks are usually in the form of methyl groups attached to genes, thereby regulating their expressions.

Table 6.1 Concordance for Homosexuality: Summary of Three Classic Studies

	Male	Female	Male/Female
Monozygotic twins	52%–65%	48%–75%	
Dizygotic twins	22%–29%	16%	33%
Adopted siblings	11%	6%	

Sources: Bailey et al. (1993); Bailey and Pillard (1991); Whitam, Diamond, and Martin (1993).

They are usually not inherited but are produced in individuals. However, epi-marks can sometimes be transmitted from father to daughter or mother to son and in this way act similarly to shared genes. Sex-specific epi-marks play a major role in fetal development by reacting to large variations in hormones. For example, epi-marks are triggered when there are large variations in testosterone, preventing male fetuses from becoming feminized and vice versa. Different epi-marks affect genitals, sexual identity, and sexual preference. However, the process of epi-marks reacting to environmental stimuli that can affect the developing fetus is not intact if epi-marks are inherited from the parent of the opposite sex; in this case, variations in androgens are not regulated by epi-marks, resulting in male fetuses becoming feminized and female fetuses becoming masculinized. This theory provides the strongest explanation of evolutionary mechanisms that affect homosexuality, in that an inherited trait (an ineffectual epi-mark) directly influences the sexual behavior of the offspring.

Biological influences on homosexuality are widely accepted, with homosexual behaviors registered in more than 450 species (Bagemihl, 1999). There are a number of biological factors that correlate with homosexuality. Some researchers have found brain differences between homosexuals and heterosexuals. For example, LeVay (1991) found that the hypothalamus, the part of the brain related to sexual behaviors, is smaller in homosexual men. In another study using magnetic resonance imaging (MRI), it was shown that gay men and straight women had similar brains in that the right and left sides were approximately the same size. Further, the brains of gay women and straight men were similar, with the right side of the brain being slightly larger than the left (Savic & Lindstrom, 2008).

Other researchers claim that exposure to prenatal hormones influences sexual orientation (Banks & Gartrell, 1995). Research on rams shows that homosexual rams are very masculinized, which leads researchers to conclude that some type of intrauterine sensory exposure made the animals sensitive to male pheromones (Barash, 2012). There is another unusual correlation: Homosexual men often have a larger number of older brothers than heterosexual men (Blanchard & Bogaert, 1996), which is explained by immunological response to male tissue triggered in the mother by previous pregnancies. See Chapter 5 for more examples of physiological correlations to homosexuality. While sexual orientation appears to be affected by both nature and nurture, many of the aforementioned studies suggest that biology plays an important role and builds a far more complex picture of human sexuality than was previously thought. Apparently, there are at least some biological differences between homosexuals and heterosexuals, suggesting that sexual orientation is more than just a choice of partners. While it is not yet fully understood what the evolutionary value of variance in sexual orientation is, it appears that it might indeed be a product of adaptation to certain conditions. In general, if a human

attribute has a fairly consistent prevalence across time and across cultures, it is highly likely to have a heritable component. And heritable traits also have a high probability of being directly or indirectly adaptive.

This chapter set forth many ways that individuals can diverge during their sexual development. For example, there are males who present as females in youth and blossom into reproductively viable males during puberty. There are women who develop with highly masculinized brains, men who have quite feminine ones, and members of both sexes who fall somewhere in between. In viewing these people and the vast number of ways a person can develop sexually, we must ask, are any of these variations disorders? Are they insignificant variants? Or are they actually adaptations to an environmental pressure? As discussed previously in this book, there has been an inclination in psychology to eschew genetic explanations for human behavior. However, biological and genetic theories provide the milieu in which variations can be identified and understood. And not just that—they represent a break from the view of sexuality that implies or ordains normative behaviors. Instead, the diversity of human sexuality is understood and explained, without reaching for pathology.