

# CONTENTS

Introduction	7
1. Let's Talk Sex	11
2. Meet the Brain	23
3. The Developing Brain and Sex	47
4. Baggage Claim	71
5. Thinking Long-Term	95
6. The Pursuit of Happiness	113
7. Final Thoughts	135
Appendix: Pornography and the Brain	143
Acknowledgments	147
Notes	151
Index	169



## Chapter One

# LET'S TALK SEX

### SEX!

It's everywhere. We human beings are made so that even the topic of sex gets our attention. Why? Because, as reliable research indicates, our interest in sex is built into our brains.

And this fascination with sex is absolutely vital. If we did not have this inborn interest in things sexual, we would not have the audacity to overcome our natural hesitation to become very personal with someone else, completely intimate, and literally joined with another.

Because of our pervasive interest, society uses sex in many ways. It is one of the constant themes to which persons of all ages are exposed. Sex is used to sell music and clothes to teens, and to sell movies, automobiles, health and fitness equipment, and many other items to adults. This phenomenon has only increased over the

**“Why not? I wore a condom.  
She said she wanted to. We’re  
old enough and smart enough  
to make decisions for ourselves.  
I’m not a kid anymore.”**

**RYAN, 16**

years, aided by social media as well as the ever-declining standards in entertainment and public discourse.

Teenagers and young adults are told that there are risks to having sex—namely, that they could contract a sexually transmitted disease or get pregnant. These risks are well known and widely documented. However, teens and adults also know that with the use of condoms or other contraceptive techniques, the morning-after pill, vaccines, careful partner selection, and—truthfully—pure luck, one is less likely to experience these problems. Even though these physical risks are real, are dangerous, and will not be totally eliminated in the foreseeable future, some people are willing to accept or ignore the dangers and plunge into the lifestyle of one partner this year (or today) and another next year (or tomorrow).

But is that all there is to it? Can we really warn young people about these two risks and count on current and future technology to improve their chances of avoiding them? Or are there other risks lying in wait out there—risks of problems that may not be as physically obvious but nevertheless just as devastating to an individual's freedom of opportunity in the future?

The answer is yes. Scientists are now much better able to see and understand what we'll refer to as the third risk.

In the following chapters, we will explore

- various aspects of sexual involvement with another person;
- the results of that behavior on the brain that can last for a lifetime after intimate contact;
- the addictive nature of sex for those involved in a series of short-term hookups or patterns of concurrent relationships leading to unhealthy choices;

- the addictive nature of sex in the context of maintaining a loving marriage;
- the fact that human beings are not slaves to the natural and good physical and emotional desire for sex;
- the fact that our brains allow us to exercise sound judgment;
- how this capacity for good decision making can trump impulse if we practice the habit of letting it do so; and
- a discussion of the burgeoning issue of pornography and its effect on the brain.

## **AWAKENING**

For prepubescent boys and girls, sexual things are asleep. The phrase “sexual awakening” is often used to describe the time in a young person’s life when he or she discovers sexual interests. The term “awakening” implies that something was asleep and indeed, for younger children, this is an accurate observation. Little boys’ and little girls’ bodies look much the same, and they reflect the sexual immaturity of their minds. They may be curious about their own bodies, and the bodies of their parents, or have questions about where babies come from, but they lack the interest and physical development that defines a human being who is equipped for sex and childbearing.

Puberty is the time of life when boys and girls begin to physically change and develop into adults with sexual desires. The physical

**“He was my first serious boyfriend and I thought I loved him. I really thought if I didn’t have sex with him he would leave me. I was fifteen and I’d never had those kinds of feelings for anyone. I can never get that first time back.”**

**CARRIE, 19**

changes that define puberty are driven by the sex hormones: estrogen for girls and testosterone for boys. These hormones begin to be produced in increasing quantities, on average, between ages eight and thirteen for girls, and nine and fourteen for boys.<sup>1</sup> These hormones, which are released by the ovaries or testes into the bloodstream, trigger all kinds of fascinating changes. Girls develop breasts, their hips grow wider, and they begin the menstrual cycle. Boys grow taller, their shoulders broaden, and they start growing more hair in various places on their bodies. And puberty, which could be said to be the doorway to adolescence, is the time during which male and female reproductive organs develop to maturity.

But puberty signals far more than a physical change. Mental and emotional transitions accompany the growth and development of the body. Though the changes that puberty produces in the brain can be seen only by neuroscientists, no one who has been around a young person going through this transition doubts that profound mental, emotional, and psychological changes are taking place at this time. These changes include the sudden emergence of physical change and sexual awareness, which can be an emotional roller coaster for any adolescent.

## **HEALTHY APPETITES**

Sex can be considered one of the appetites with which we are born. If you look up “appetite” in Merriam-Webster’s Dictionary, you’ll read that it’s “any of the instinctive desires necessary to keep up organic life.” A secondary definition is “an inherent craving.” A truth to remember is that appetites are *necessary* but are values-neutral. They can be used appropriately or they can be misunderstood and misused. For example, without an appetite for food, we wouldn’t survive. Food provides energy and fuels our bodies. Yet misuse of

this natural appetite in the forms of overeating or eating too much of the wrong things can cause cardiovascular disease, diabetes, and many other problems.

These health problems can dramatically change the entire course of an individual's life.

Sex is an important, healthy appetite that fits perfectly the definition of "an instinctive desire necessary to keep up organic life." Without an appetite for sex, there would be no procreation, and human life would come to an end. But as with food, sex can be misunderstood and misused. We can see the physical damage to health from the misuse of sex—HIV/AIDS and sexually transmitted diseases, pornography addiction and nonmarital pregnancy. These are not insignificant problems; they occur far more often than most people realize. And when they do occur, they can change the entire course of a person's life, causing complications they never dreamed of.

In contrast to pregnancy or sexually transmitted disease, the emotional and psychological impact of unwise sexual activity cannot be guarded against with condoms or other forms of contraception. This is a third risk of sex, one that is rarely acknowledged but that has enormous implications for young people and their futures, and for unsuspecting adults. You'll read about it in this book.

### **SO, WHEN IS IT "SEX"?**

So now that we know that sex is a normal appetite, what exactly is it? As strange as it sounds, many people disagree over what sex really is. For example, does penetration have to occur in order for the act

**"I couldn't wait to have sex with her. All my friends were doing it. I was tired of listening to everyone else's stories. I wanted to know what it was like for myself."**

**KEVIN, 17**

to qualify as “sex”? Or can two people “have sex” simply by sexually touching each other, even on top of their clothes? Does oral sex count? What about masturbation? The most reasonable definition suggested by recent brain studies indicates that *sexual activity is any intimate contact between two individuals that involves arousal, stimulation, and/or a response by at least one of the two partners.*

In other words, sexual activity is any intentionally sexually intimate behavior between two partners, or even one person if self-stimulation is used.

**“Sex is when you go all the way with somebody. As long as you don’t actually do it, you aren’t having sex. So we can still have a good time without worrying about all that other stuff.”**

MELISSA, 15

However, sexual arousal does not *begin* with the parts of your body that feel the most aroused. Sexual excitement is actually centered in the brain. It is possible to be stimulated and even achieve orgasm without any physical contact with the sexual organs at all. An excellent example of this is a nocturnal

emission known as a “wet dream”—when arousal and even ejaculation occurs in dreams during sleep.

Perhaps the best way to describe how sex begins in the brain is to consider a couple and go through the typical sequence of events that leads them to sexual intercourse, assuming the relationship is nonabusive and unselfish. There is usually a progression of physical contact that, sooner or later, acquires the *purpose* of having sexual intercourse. A couple may begin with touching, light kissing, and other behaviors not commonly referred to as sex. This fascinating process is clearly visible with modern brain scan technology, revealing different areas of the brain “lighting up.” A couple who may not

have begun touching with the intention of having sex, but at some point that can become the goal. At that time, the kissing, touching, and any other contact takes on a new energy, and different portions of the brain become engaged and aroused. When those actions are taken with the *intention* of having sex, sexual activity has begun, concluding with physical sexual union.

We can also see from this description why it is necessary to include conduct such as showering together, oral sex, mutual masturbation, and intimate touching as sexual activity.<sup>2</sup> In addition to being included as sexual behavior because of the intent of either or both people involved, these are sexual behaviors because, among other things even short of penetration, they can result in a person becoming infected with a sexually transmitted disease if he or she engages in some of these activities with an infected person.<sup>3</sup> These behaviors are also considered sexual activity since the individuals involved can experience similar emotions of excitement and pleasure as they would from sexual intercourse, as well as experience devastation when the relationship with the person with whom they've engaged in these activities ends.

Integrating all this information leads us to the conclusion that a definition of sexual activity must include not only sexual intercourse, but also anal sex, oral sex, mutual masturbation, showering together, fondling of breasts, other behaviors and, yes, even kissing if done purposely to produce sexual stimulation and gratification.

Sex can and should be a positive experience. It should be the intimate interaction between two persons who care for each other and desire to share their innermost feelings with each other. Sex has many wonderful benefits: the pleasure and satisfaction of becoming an intimate part of another person's body; verbal and physical communication; expressing and deriving pleasure with a partner;



**“I had no idea how having sex as a teenager could affect the rest of my life. I didn’t really know what love was. By the time I got married, sex was so confusing for me. It has been a huge issue in our marriage and I don’t know how to fix it.”**

**CHRISTIE, 29**

When sex results in an undesired or unplanned, nonmarital pregnancy or results in a sexually transmitted infection, it is not good. And when sex produces feelings of regret, depression, suicidal ideation, and other emotional problems, it is not good.

## **NOT JUST A BODY**

Now that we have defined sex according to physical activity—according to what our bodies are doing—we’re ready to talk about the rest of the story. In order to truly understand why sex sells and why it is so pervasive in our society, we have to understand that humans are not just sex machines or animals. We, as human beings, are so much more.

If we think of sex as only a physical activity to be engaged in at our pleasure, and only for our pleasure, we will be blindsided by problems produced by the misunderstandings and miscalculations of our human nature. If we think our makeup is limited to satisfying appetites, we’ll conclude that we can engage in sexual activity, enjoy it on a physical level, and totally disassociate these acts from the rest

uniting the “two” to become another “one” and, clearly, the potential for procreation.

But sex misused has obvious negative consequences. When one is forced or coerced to have sex, it is not good. When sex is used to accomplish favors or to influence another, it is not good. When sex is used for financial gain, used abusively, or used to humiliate another, it is not good.

of what we are as human beings—but we'll be sadly mistaken and be blindsided by what might happen to us.

Going back to the time of sexual awakening, important research into the phenomenon of puberty has yielded some important discoveries. It has been found that teenage boys with high testosterone levels were more likely to engage in sexual behaviors than boys with lower hormone levels.<sup>4</sup> In girls, early puberty has been linked to early age of first sexual intercourse.<sup>5</sup> Yet research has found that parental relationships had the greatest influence on teen sexual behavior.

So what's the point? It is worth remembering that every child's body and brain transforms as he or she gets older, and this transformation has a huge physical and psychological impact on all things sexual. An intense fascination and desire for sex often accompanies these changes. Yet simply going through puberty, or having a sex hormone coursing through a young person's bloodstream, or even a specific genetic disposition, does not determine the decisions they make about sex. Beneficial factors, such as home environment and adult guidance, can help shepherd an adolescent through this tumultuous period in life. Negative guidance, if it dominates, from peers or the media can make the journey much more difficult.

Finally, it is clear that the brain is still developing during puberty, and will continue to do so far after the external physical changes have reached their conclusion.

A 2017 survey of high school adolescents illustrates that sexual activity has more ramifications beyond the physical. The survey showed that both boys and girls who have had sex are more likely to be depressed than their friends who have not. The survey also asked questions regarding the students' considerations of making a suicide attempt, making a suicide plan, and actually attempting suicide. Those students who had not had sexual contact consistently

had lower percentages than their sexually experienced classmates on all questions regarding suicide.<sup>6</sup>

In all likelihood, none of these young people were aware that depression and suicidal thoughts might be caused in part by their sexual behavior. Consider the following questions:

- Why are those who were not virgins when they married more likely to divorce than those who remained abstinent until marriage?<sup>7</sup>
- Why are sexually active adolescents more likely to be depressed than their abstaining peers?<sup>8</sup>
- Why do married couples report higher levels of sexual satisfaction than unmarried individuals with multiple sexual partners?<sup>9</sup>

The answers, of course, lie in the fact that human beings are creatures who are much more than physical bodies. We possess the ability for cognitive thought, which includes judgment, abstract thinking, planning for the future, moral intelligence, and other processes that govern our lives. Our decision-making ability, coming from the highest centers of the brain, can guide an individual to the most rewarding sexual behavior—unless bad programming from premature and unwise sexual behavior during the adolescent years has occurred, adversely affecting the brain's ability to make healthy decisions.<sup>10</sup>

This is a risk about which most young people and most parents are totally unaware.

Fortunately, modern neuroscience of the past few years has opened a door of understanding that provides incredibly helpful guidance away from trouble. Many of the answers to the questions

above, and others, may be found in modern neuroscientific research, the study of the human brain and nervous system, which has revealed startling new information about how sex affects the brain.

In the past, efforts to accurately assess the connection between sex, love, sexual desire, sexual risk-taking, and so on with brain activity were limited. But with the aid of modern research techniques and technologies, scientists are confirming that sex is more than a momentary physical act. It produces powerful, even lifelong, changes in our brains that direct and influence our future to a surprising degree.<sup>11</sup> This new neuroscience information, which has greatly expanded over the past three decades, has transformed the scientific discussion about sex. Perspectives from medical, public health, and social science literature will also be utilized in this book to enhance our understanding of sexual behavior in adolescents and young adults in the larger cultural context.

The uniqueness of becoming an intimate part of another person's mind and body—emotional and physical bonding, both experienced in a healthy way, and the vital role this plays in one's health, happiness, and hope for the future—is the central issue we will be explaining in this book. It is probably the most important outcome of healthy, positive sex.

## TO THINK ABOUT

---

- How can “sexual activity” be defined? How do the authors arrive at this description?
- When is sex a positive experience? When is it not?
- How are humans more than a collection of physical body parts?