**Instructor’s Media Guide**

By Michael Jason McCoy

to accompany

*Discovering Human Sexuality,* Fifth Edition

LeVay • Baldwin • Baldwin

**Chapter 4: Sex Development and Diversity**

*Note:* This Media Guide includes links to websites where videos are publicly available. Oxford University Press makes no guarantee as to the method by which the hosting website has secured permission to host each video. This permission is the responsibility of the hosting website and the individual or entity that posted the video. Please respect all appropriate copyright laws in your use of these videos and any other materials.

1. “[Brainsex](https://www.youtube.com/watch?v=9RAXm5kRBWU)”

**Source:** [BBC One](http://www.bbc.co.uk/sn/tvradio/programmes/sexsecrets/), *Secrets of the Sexes*, Episode 1 (2005)

**Length:** 50 min, 48 sec

**Description:** “The results of a new BBC sex survey of 500,000 people from around the globe—the largest ever carried out—provide very revealing answers. And five men and five women are put through a unique battery of experiments to uncover the real differences between the sexes.”*—BBC*

**Concepts/Keywords**: *gender/sex differences, gender survey, what men and women remember, gender traits, casual sex, promiscuity, empathy, personality differences, emotional sex differences, cognitive sex differences, brain scanning, brain morphology, visuospatial skills, testosterone, competition, risk-taking, road rage, prenatal hormones, Simon Baron-Cohen, amniotic fluid, John Manning, 2D:4D ratio*

2. “[Battle of the Sexes](https://www.dailymotion.com/video/x2vj8q8)”

**Source:** National Geographic, *Brain Games*, Season 2, Episode 7 (2013)

**Length:** 22 min, 30 sec

**Description:** Host Jason Silva takes you on a fun-filled, educational journey into the true meanings of male and female. Do sex differences exist? If so, are they merely a product of the environment or can any variation be biologically based? *Brain Games* puts these and many other questions to the test.

**Concepts/Keywords:** *sex differences, “battle of the sexes,” stereotypical gender roles, cognitive and personality traits, nature/nurture, male/female brain, sex differences in color perception, sex roles, socialization, biological anthropology, Helen Fisher, evolution, spatial reasoning, mental rotation, amygdala, estrogen, competitiveness, facial recognition, memory, attention, average sex differences*

3. [*Sex: Unknown*](https://www.youtube.com/playlist?list=PLMShBONs__GUAkAnG3bHgVXWiG6w59fIz)

**Source:** [PBS Nova](https://www.pbs.org/wgbh/nova/gender/) (2001)

**Length:** 60 min

**Description:** Using the David Reimer story as a case study (see links below), this program introduces the complexities involved in the formation of gender identity.

“Many babies are born intersex with genitals that did not fully develop in the womb. In such situations, most doctors declare a state of medical emergency, and quickly move to operate in an effort to ‘fix’ the child and give it the appearance of either a male or female. But this intervention is not always welcome. Many intersex adults that were surgically changed in infancy now insist they should have been given a choice in the matter. In many cases the gender they were assigned at birth does not match the gender they grew to believe they were. This begs a larger question: How much of our gender identity is formed by nature and how much by nurture? ‘Sex: Unknown’ delves into the complex world of gender identity.”—*PBS NOVA*

**Concepts/Keywords**: *Janet Reimer, Bruce/Brenda Reimer, circumcision, botched circumcision, John Money, sex change surgery, nature vs. nurture, Johns Hopkins University, gender identity, hermaphrodite, gender development, intersex, testosterone, fetal hormones, ambiguous genitalia, chromosomes, critical period, gender neutrality, upbringing, Dr. Spock, 1950s, sex assignment, Milton Diamond, testosterone in the womb, animal experiments, blank slate, UCLA, Roger Gorski, brain-based sex differences, hypothalamus, sexually dimorphic nucleus (SDN), female rats behaving masculine, estrogen, BBC Open Secret, Amsterdam human ‘sex difference’ research, Dick Swaab, transsexual, Brenda/David speaks out, deformed penises, sex ‘normalizing’ surgery, Philip Ransley, rejecting gender assignment, treating intersex infants*

Suggested Segments

**1.** [**Intersexuality: The David Reimer story**](https://www.youtube.com/watch?v=SMPlkltGRx4&list=PLMShBONs__GUAkAnG3bHgVXWiG6w59fIz)

**Length:** 9 min, 48 sec

**Concepts/Keywords:***Janet Reimer, Bruce/Brenda Reimer, circumcision, botched circumcision, John Money, sex change surgery, nature vs. nurture, Johns Hopkins University, gender identity, hermaphrodite, gender development, intersex, testosterone, fetal hormones, ambiguous genitalia, chromosomes, critical period, gender neutrality, upbringing*

**2.** [**Raising gender: John Money’s theory of gender development**](https://www.youtube.com/watch?v=hIl466jIvrM&index=2&list=PLMShBONs__GUAkAnG3bHgVXWiG6w59fIz)

**Length:** 9 min, 2 sec

**Concepts/Keywords:** *Janet Reimer, John Money, Bruce/Brenda Reimer, gender, gender identity, Dr. Spock, 1950s, sex assignment, Milton Diamond, testosterone in the womb, animal experiments, biological perspective, behavioral perspective*

**3.** [**Brenda Reimer is NOT a happy girl: Evidence against Money’s theory?**](https://www.youtube.com/watch?v=6jSprFR7bJE&index=3&list=PLMShBONs__GUAkAnG3bHgVXWiG6w59fIz)

**Length:** 9 min, 16 sec

**Concepts/Keywords:** *Roger Gorski, hormones, nature vs. nurture, Janet Reimer, Bruce/Brenda Reimer, John Money,**gender identity, masculinity vs. femininity, estrogen, BBC Open Secret, Amsterdam human ‘sex difference’ research, Dick Swaab, transsexual*

**4.** [**John Money’s patient speaks: Brenda is David!**](https://www.youtube.com/watch?v=v6M2TWiqp4c&index=4&list=PLMShBONs__GUAkAnG3bHgVXWiG6w59fIz)

**Length:** 9 min, 1 sec

**Concepts/Keywords:** *Dick Swaab, transsexual, brain-based differences, controversy, nature vs. nurture, John Money, Milton Diamond, Bruce/Brenda Reimer, David Reimer speaks, gender, gender identity*

**5.** [**Money’s legacy: Still attempting to “normalize” gender through surgery**](https://www.youtube.com/watch?v=26VTdR_e8Ow&index=5&list=PLMShBONs__GUAkAnG3bHgVXWiG6w59fIz)

**Length:** 6 min, 20 sec

**Concepts/Keywords:** *deformed penis, sex “normalizing” surgery, Philip Ransley, John Money, rejecting gender assignment, treating intersex infants*

4. [*The Truth about Female Desire* (Part 2)](https://www.youtube.com/watch?v=ag4GenAVVws)

**Source:** Channel 4 (UK), Part 2 (2005)

**Length:** 47 min, 40 sec

**Description:** This series features collaboration between the Kinsey Institute at Indiana University; London’s Brunel University, and Channel 4. Eight British women of various geographic and sexual backgrounds volunteer to have their bodies and minds probed, surveyed, and tested in the name of science. Former director of the Kinsey Institute, John Bancroft, and his colleagues Cynthia Graham and Erick Janssen spend an intimate week with these women in hopes of gaining a better understanding of and appreciation for the complexities of female sexuality.

This part focuses on the evolutionary roots of sexuality. Researchers use various experimental designs and techniques in an effort to understand the unconscious influences involved in attraction.

**Concepts/Keywords:** *sexual orientation, bisexuality, Erick Janssen, sexual arousal, Kinsey scale, measuring sexual arousal, vaginal probe, John Bancroft, John Manning, mate selection, unconscious, universal principles of attraction, fertility cues, finger ratios, 2D:4D ratio, testosterone, estrogen, smelling attractiveness, reproductive fitness, pheromones, sweaty T-shirt experiment, sex hormones, fetal hormones*

Suggested Segment

**1.** [**Finger ratios and sexuality**](http://www.youtube.com/watch?v=ag4GenAVVws&t=20m44s)

**Segment Cue:** 20:44–24:18

**Description:** This segment highlights the relationship between the length of a man’s fingers and his perceived attractiveness. Surprisingly, the relationship between ring finger length and index finger length is a strong indicator of how much testosterone a particular man was exposed to during fetal development. John Manning’s research finds that men with a greater ring finger-to-index finger ratio are anonymously selected as most attractive by females.

**Concepts/Keywords:** *John Manning, 2D:4D ratio, fetal hormones, mate selection, testosterone, estrogen, perception of attractiveness, unconscious, reproductive fitness*

5. “[Why Sex?”](https://www.youtube.com/watch?v=R9OmlJKVIMQ)

**Source:** [WGBH/NOVA Science Unit (PBS)](http://www.pbs.org/wgbh/evolution/), *Evolution*, Episode 5 (2007)

**Length:** 56 min, 38 sec

**Description:** “In evolutionary terms, sex is more important than life itself. Sex fuels evolutionary change by adding variation to the gene pool. The powerful urge to pass our genes on to the next generation has likely changed the face of human culture in ways we’re only beginning to understand.”*—PBS*

**Concepts/Keywords:***sexual selection theory, sexual vs. asexual reproduction, whiptail lizard, Meredith Small, Robert Rhinehock, sexual pathology, Red Queen hypothesis, sexual conflict, evolutionary fitness, mate competition, mate choice, reproductive strategies, behavioral traits, monogamy, extra pair copulations, paternity certainty, gender roles, infanticide, cooperation, bonobos, evolution of attraction, sweaty T-shirt experiment, major histocompatibility complex (MHC), evolutionary psychology, Geoffrey Miller, evolution of the mind*

Suggested Segment

**1.** [**The gender-bending jacana**](https://youtu.be/R9OmlJKVIMQ?t=1766)

**Segment Cue:** 29:26–31:37

**Description:** This segment discusses the concept of promiscuity and gender roles. Perhaps cheating is like mate insurance—that is, it gives the females a sort of “ace in the hole.” For a particular species of bird living among predators, many eggs are eaten by hungry crocodiles. Unlike the female of most bird species, the South American jacana (who is polyandrous), seems to care more about quantity than quality. This role reversal of sorts may explain why her behavior is more like that of a stereotypical male. In fact, the female jacana is usually larger, more aggressive, and more promiscuous than the male jacana.

6. “[My Secret Self: A Story of Transgender Children”](https://www.youtube.com/watch?v=eJ_BHY5RolA)

Source: 20/20 (ABC News) (2007)

**Length:** 42 min, 6 sec

**Description:** Journalist, reporter, and talk show host Barbara Walters hosts an hour-long investigation of transgender identity. With great compassion and adept interviewing skill, Walters introduces viewers to three families, all of whom have a loved-one who is transgender.

**Concepts/Keywords**: *transgender, gender identity, gender role, DSM-IV-TR, gender identity disorder, fetal hormones, gender neutral, gender constancy, gender schemas, nature vs. nurture, gender dysphoria, hormone replacement therapy, breast binding, self-mutilation, cross hormones, sex reassignment surgery, Internet support groups, transgender conferences*

Suggested Segments

**1.** [**Jazz: Six-year-old male to female transgender**](https://www.youtube.com/watch?v=eJ_BHY5RolA)

**Segment Cue**: 3:20–16:32

**2.** [**Riley: Ten-year-old male to female transgender**](https://www.youtube.com/watch?v=eJ_BHY5RolA)

**Segment Cue:** 17:10–32:21

**3.** [**Jeremy: A teenage female to male transgender**](https://www.youtube.com/watch?v=eJ_BHY5RolA)

**Segment Cue:** 32:22–36:38

**4.** [**Conclusion: Pros and cons of transitioning**](https://www.youtube.com/watch?v=eJ_BHY5RolA)

**Segment Cue:** 36:39–41:26

7. “[I Am Jazz Debates with Tomi Lahren](https://www.youtube.com/watch?v=lxZG0oDQRbQ)”

**Source:** The Learning Channel (TLC), Season 3, Episode 8 (2017)

**Length:** 7 min, 58 seconds

**Description:** This clip features Jazz, now 17, discussing how it feels to live inside the wrong body. Conservative voice and always controversial Internet personality, Tomi Lahren debates with Jazz on everything from the origins of being trans to the infamous “bathroom bills” that have swept through various state legislatures in 2016.

**Concepts/Keywords**: *Jazz, trans, transgender, Tomi Lahren, LQBTQ, conservativism, NC bathroom bill, drag, misconception, gender confirmation surgery, government overreach, authentic self, discrimination, acceptance*

8. [*Life’s Greatest Miracle*](https://www.pbs.org/wgbh/nova/video/lifes-greatest-miracle/)

**Source:** PBS Nova (2001)

**Length:** 53 min, 56 sec

[Viewer discretion is advised. This video features a live birth.]

**Description:** Narrated by John Lithgow, this PBS NOVA episode is a scientific and detailed examination of human life. From fertilization to birth, this documentary facilitates our understanding of how life is created.

**Concepts/Keywords**: *advantages in sexual reproduction, sperm, meiosis, cloning, genes, DNA, chromosomes, puberty, eggs, fetus, ovary, testicle, fertilization, hormones, reproductive anatomy, arousal, cervical mucus, ovulation, uterus, fallopian tube, cilia, zona pellucida, acrosomal reaction, capacitation, embryo, polar body, cell division, identical twins, blastocyst, implantation, morning sickness, gastrulation, ultrasound, X and Y chromosomes,* SRY *gene, gonad, sex determination & differentiation, testosterone, fetus, placenta, villi, quickening, myelination, labor, delivery, uterine contractions, cervical dilation, Cesarean section*

9. “[Monkey Business](https://www.bbc.co.uk/programmes/p0278kbv)”

**Source:** BBC Two (2014)

**Length:** 3 min, 15 sec

**Description:** In this segment from the BBC Two series “Is Your Brain Male or Female?”Michael Mosley examines whether the toy preferences of Barbary macaque monkeys are similar to those of children. This is an excellent way to introduce the nature vs. nurture debate.

**Concepts/Keywords**: *nature vs. nurture, experiment, primates, toy preference, gender differences, sex differences, play preferences*

10. [*Testosterone Factor*](https://www.dailymotion.com/video/x5jlzbr)

**Source:** National Geographic Explorer (2008)

**Length:** 45 min, 19 sec

**Description:** “Leading researchers in psychology, biology and anthropology reveal this powerful male hormone’s fascinating influence on strength, status, success, and even commitment.”

National Geographic presents *Testosterone Factor*, an evocative and illuminating journey into the science of endocrinology. This documentary-style production critically examines a molecule that perhaps more than any other has captured universal attention but has unfortunately inspired many erroneous claims and some downright falsehoods. The sex steroid with the “bad boy” reputation, testosterone has been and continues to be shrouded in mystery, but scientists are beginning to tease fact from fiction.

**Concepts/Keywords:** *testosterone, violence, rage, aggression, sex, power, status, success, prenatal testosterone, mating effort, priming, cholesterol, endocrine system, rank, testosterone levels, prenatal exposure to testosterone, verbal skills, visuospatial skills, mental rotation test, 2D:4D ratio, finger length,, nature versus nurture, vervet monkeys, play preferences female choice, measuring testosterone levels, evolution, survival, fMRI, testosterone and competitiveness, flirtatious behavior, female mate preferences (shifts during ovulation), long-term mating, paternal investment, investment theory, sexual selection, mating strategy, reproductive strategy, marriage, divorce, fatherhood, long-term commitment, social bonding*

Suggested Segments

**1. Introduction to testosterone**

**Segment Cue:** 0:00–2:20

**Description:** This is a riveting and contemporary visual display of the variety of contexts in which testosterone factors into behavior, thinking, and feeling. Whether the situation is fighting between lions or marital infidelity, scientists are applying a variety of tools and methods in an attempt to separate hormonal fact from fiction.

**Concepts/Keywords:** *hormones, sex, testosterone, endocrinology, politicians, power, strength, research*

**2. Measuring testosterone and its effects**

**Segment Cue:** 2:20–5:33

**Description:** This segment discusses what testosterone is and, more importantly, what it does.

**Concepts/Keywords:** *testosterone, muscle, maleness, mate-seeking displays, intraspecies competition, Peter Gray, mating effort, priming, Jennifer Hastings, testosterone molecule, Russell Fernald, chemical messaging, receptors, endocrinology*

**3. Testosterone across species**

**Segment Cue:** 5:33–9:25

**Description:** Watch as Dr. Stephanie Anestis of Yale University puts her hunch about the effects of testosterone on behavior to the test. Using a population of chimpanzees, Anestis explores the potential link between testosterone levels and social hierarchy.

**Concepts/Keywords:** *testosterone, vertebrates, animal relatives, Stephanie Anestis, social hierarchy, aggressiveness, chimpanzee, behavioral style, dominance hierarchy, affection, aggression, play, obtaining testosterone samples, rank, testosterone levels*

**4. How does testosterone affect humans?**

**Segment Cue:** 9:20–13:50

**Description:** To understand the effects of testosterone on humans, scientists must go back in time. Some are actually turning to the womb environment in an attempt to pinpoint how sex hormones interact with the fetus, perhaps setting the stage for the individuals we will eventually become.

**Concepts/Keywords:** *fetus, sex differences, uterine environment, prenatal exposure to testosterone, verbal skills, visuospatial skills, mental rotation test, John Manning, 2D:4D ratio, finger length, developmental research, cognitive science, visual preference task, habituation, pre-gender, pre-socialization, nature versus nurture, eye tracking, Gerianne Alexander*

**5. Are play preferences learned or inborn?**

**Segment Cue:** 13:55–14:37

**Description:** This segment begins with Dr. Gerianne Alexander discussing how she and her team investigate the nature versus nurture question of gender-specific behaviors. Watch as she introduces you to her vervet monkeys, small primates who show some surprising stereotypical play preferences.

**Concepts/Keywords:** *Gerianne Alexander, sex/gender differences, nature versus nurture, vervet monkeys, play preferences, toy preferences, socialization, biologicalization, sexual differentiation of the brain, testosterone-influenced male preferences, cross species*

**6. Boys to men**

**Segment Cue:** 14:37–16:57

**Description:** This segment chronicles the way in which testosterone turns boys into men. Is testosterone responsible for teen angst, irritability, and even thrill seeking? Watch as these and many other related questions are put to the scientific test.

**Concepts/Keywords:** *hormone surge, juvenile pause, adolescence, age of testosterone, risk taking, mortality, sexual interest,* *accidents, illusion of invincibility, reproductive investment, mate attraction, evolution, mating access, differential reproductive success, female choosiness, intrasex competition*

**7. Boys to men II**

**Segment Cue:** 16:53–21:20

**Description**: Dr. Russell Fernald’s experiments with “bullyectomy” (surreptitiously removing a dominant male fish from an aquarium under the cloak of night) are featured in this segment. His lab at Stanford University is investigating testosterone’s influence on puberty by studying African cichlids (small fish). This affords Dr. Fernald a unique and controlled look at what happens when a nondominant male becomes a dominant male.

**Concepts/Keywords:** *testosterone, African cichlids, Russell Fernald, Stanford, dominant male, dominance displays, gonads, sperm, reproduction*

**8. Behavioral endocrinology (social situations and testosterone levels)**

**Segment Cues:** 21:30–35:10

**Description:** This segment introduces the learner to the field of behavioral endocrinology—the science that explores the relationship between hormones and environmental influences (i.e., social behavior). Experiments of both humans (Rugby Team members and college students) as well as animals (spotted female hyenas) provide scientific insights into the role testosterone plays specifically in violence, aggression, dominance, power and status.

**Concepts/Keywords:** *behavioral endocrinology, baseline testosterone, testosterone fluctuations, male-male competition, sports, Potomac Athletic Club, measuring testosterone levels, evolution, survival, winning, losing, Richard Bribiescas, Yale University, resource investment, payoffs, female hyenas, dominance hierarchy, Steve Glickman, pseudophallus, exposure to testosterone in the womb, Diadic bone test, Pranj Mehta, desire for status, status threat, reputation, ultimatum game, fMRI, fairness, insula (insular cortex), perception of emotion/pain*

**9. Testosterone and mating: Dads versus cads**

**Segment Cue:** 35:00–41:55

**Description:** This segment introduces and explores the question of whether or not females can and do select mates based on subtle differences in testosterone levels. If so, how do they do it? Why would this be important to females? Watch as Peter Gray and others explore these and other related questions using the tools of science and clever methods and designs.

**Concepts/Keywords:** *testosterone and competitiveness, flirtatious behavior, female mate preferences (shifts during ovulation), long-term mating, micro expressions, Peter Gray, paternal investment, investment theory, sexual selection, mating strategy, reproductive strategy, marriage, divorce, fatherhood, long-term commitment and affiliative bonds, artificial manipulation of hormones*

**10. Turning a man**

**Segment Cue:** 41:55–44:57

**Description:** This segment explores the masculinizing effects of testosterone. Watch as we meet Nick (born a female), a transgender male, and his physician, Dr. Jennifer Hastings, a sex reassignment specialist who manages Nick’s testosterone injections and monitors the accompanying physiological and psychological changes.

**Concepts/Keywords:** *testosterone, injections, transsexual, sex reassignment, transgender, Jennifer Hastings, male stereotypical behavior*

11. “Gay or Straight?”

[**Part 1**](https://www.youtube.com/watch?v=IoZoRbP-0WM)**,** [**Part 2**](https://www.youtube.com/watch?v=WTLAof9oXCI)**, and** [**Part 3**](https://www.youtube.com/watch?v=RGnZgC47SLA)

**Source:** 60 Minutes (CBS News) (2006)

**Length:** 60 min (three parts)

**Description:** “There are few issues as hotly contested—and as poorly understood—as the question of what makes a person gay or straight. It’s not only a political, social, and religious question but also a scientific question, one that might someday have an actual, provable answer.”*—Leslie Stahl*

“Gay or Straight” focuses attention on the idea that sexual orientation may be more biologically based than once believed. This documentary-style production strikes a balance between heartfelt testimonials the empirical science of researchers in the fields of biology, psychology, and genetics.

**Concepts/Keywords:** *sexual orientation, twins, childhood gender nonconformity, Michael Bailey, nature versus nurture, gaydar, testing gay stereotypes, gay brain, nature versus nurture, predicting sexual orientation, identical twins, gender roles, fetal environment, sex hormones, fetal hormones, sexual orientation, sexual behavior, mating responses, testosterone, castration, Marc Breedlove, rat experiments, mounting, lordosis, older brother effect*

Suggested Segment

**1.** [**Altering Rat Gender Behavior via Hormones**](https://youtu.be/-S5QYVe0mJY?t=84)

**Segment Cue:** 1:24–3:05

**Description:** Dr. Marc Breedlove, by manipulating the hormones testosterone and estrogen, can influence how male and female rats behave upon sexual maturity. For instance, male rats castrated at birth (deprived of testosterone) later show feminine behavior by performing lordosis or a stereotypical female mating posture. In contrast, female rats given testosterone injections at birth later perform the characteristic male mounting behavior.

**Concepts/Keywords:** *sex hormones, fetal hormones, sexual orientation, sexual behavior, mating responses, testosterone, castration, Marc Breedlove, rat experiments, mounting, lordosis*

12. “[How to Talk (and Listen) to Transgender People](https://www.youtube.com/watch?v=HbQZ7jAvgoI)”

**Source:** TED (2017)

**Length:** 6 min, 24 sec

**Description:** “Gender should be the least remarkable thing about someone, but transgender people are still too often misunderstood. To help those who are scared to ask questions or nervous about saying the wrong thing, Jackson Bird shares a few ways to think about trans issues. And in this funny, frank talk, he clears up a few misconceptions about pronouns, transitioning, bathrooms and more.”

**Concepts/Keywords**: *Jackson Bird, transgender, trans, bathroom controversy, advocacy, coming out, awareness, acceptance, changing sex is a multistage process, transitioning, hormone replacement therapy, gender pronouns, transphobia, law*

Discussion Questions

1. Imagine that you are a research scientist. Construct three hypotheses to predict gender differences.

**Relevant videos:** 1–12

2. Define gender. Be sure to include a socially constructed conceptualization and a biology-based conceptualization.

**Relevant videos:** 1, 2, 3, 4, 5 (Segment 1), 6 (Segments 1–4), 12

3. What is gender signaling?

**Relevant video:** 5 (Segment 1)

4. Define the term “transgender.”

**Relevant videos:** 6 (Segments 1–4) 7, 12

5. What does the story of David Reimer teach us about gender identity?

**Relevant video:** 3

6. What evidence, if any, exists in support of a biological basis for gender identity?

**Relevant videos:** 3, 6, 7, 9, 10, 11, 12

7. What does the example of the South American jacana suggest about sex/gender roles?

**Relevant video:** 5 (Segment 1)

8. Imagine that you have a child who is intersexed: chromosomally female, appears characteristically female, but has enlarged genitalia that resemble those of a male. What would you do and why?

**Relevant video:** 3