

PSYC 200
LECTURE 8
Feb 1st

Sexual Reproduction

it is advantageous for a species because new combo of genes will help species adapt

siblings and twins

identical (monozygotic) twins: share 100% of your genes with your twin

fraternal (dizygotic) twins: 2 eggs fertilized by 2 sperms, share 50% of you genes with your twin
50% of our genes are shared with our parents and siblings

cell division

sex cells are produced through process called meiosis

each one of these gametes are slightly different from each other, each chromosome is not the same

sexual reproduction shuffles the genetic cards twice, once during fertilization and once during meiosis

any sort of genetic mutation is passed on to gametes

extra copy of chromosome 21, can be passed onto next generation and result in down's syndrome

mitosis: chromosomes duplicate themselves and cell division takes place, produces two genetically identical cells

Trait inheritance: nature vs. nurture debate

the theory of mendelian heredity explains how single-gene traits pass from parents to offspring
most traits do not correspond to a single gene, but come from the interaction of several genes

- polygenic traits: due to interaction of several genes (eye color, hair color, etc)
- gene complexes: genes reacting with one another
- continuous traits: height, skin color, hair color, these traits have a wide variety of values

skin pigmentation is one example of a continuous trait

to have cystic fibrosis, you need to have homozygous recessive alleles in order to be expressed

remember that these gene complexes interact with the environment, traits are simply the result of both genetic inheritance and environmental influence

example: intelligence is a polygenic trait (also continuous) but it is also influenced by the environment

sexual selection

the process of how a mate is chosen and determines which traits will be passed on

selective breeding

a process by which pairs or organisms of the same species with desirable traits are mated in order to select those traits

Robert Tryon: identified two groups of rats, fast and slow, he mated all the fast rats together and all the slow rats together, what he found was that even the slowest of the fast rats were still faster than the fastest of the slow rats

through this selective breeding, he was able to pass on certain traits to offspring

behaviour genetics

how much of our behaviour is determined by genes and how much by environment

- twin studies: any similarity is due to genes, any difference is due to environment, they study

- twins that have been raised apart from each other
- adoption studies: researchers compare individual traits of the adopted individuals to their biological parents and their adoptive parents, helps determine how much of the traits were inherited and how much come from the environment, most studies have found that adoptees resemble biological parents by personality
 - heritability: refers to the degree to which a trait is able to be passed on genetically (i.e. IQ), some traits have strong heritability like mental disorders or eye color while others have low heritability (environment plays a bigger role) like intelligence

molecular genetics

a field of study emphasizing the analysis of the molecular structure and function of genes to try and identify the specific genes responsible for a certain disease, trait or behaviour

evolution by natural selection

evolutionary psychology is a field that attempts to explain the development of the human mind and behaviour by studying how adaptive behaviours helped human ancestors survive and reproduce

- innate traits: you were born with these traits and they are adaptive, example is baby reflex, if you stroke its left cheek it will turn its head to the right, if you put any object close to a baby's mouth, it will automatically start sucking, breastfeeding is an innate traits
- issues with the evolutionary perspective

acquired characteristics: an early theory of evolution

- jean-baptiste de lamarck: in organisms, survival depends on its ability to acquire an adaptive traits and this organism passes this trait onto future generations, his theory introduces the idea of evolution

it didn't explain inheritance however (this is important), just because an individual has a trait doesn't mean it will be passed on

darwin and selective breeding

- certain traits are passed on because they are useful, these traits help the organism survive/reproduce and because the organism was able to survive/reproduce, it could pass on its genes to the following generations

the environment plays a very important role in evolution

- misconceptions about evolution: species change in order to prepare for environmental changes or that they change in order to become more highly evolved

Human DNA is 98% similar to that of the chimps, this difference accounts for our ability to walk upright, our larger brains, our ability to speak

human evolution

bipedalism: ability to walk upright

encephalization: evolution of the human brain, they increased in size, most probably increasing our ability to think, to plan, to remember memories, gave us ability for abstract thought, we haven't seen this in other species because humans evolved at a faster rate due to protein encoding/synthesis

language

species-typical behaviours

human behaviour

- universality of facial expressions
 - charles darwin: the expression of the emotion in man and animals
 - paul ekman and wallace friesen
- how does our biology control what we learn as well as when and how?
 - biological preparedness: we are born with certain biological features that promote certain traits (we are born with elongated torso which encourages walking on two feet)
 - instinctive drift: teaching an organism something it isn't biologically prepared for, yet it will always drift back to its natural movements

in-group advantage: being able to recognize emotions within our own cultural group, we can talk and write yet we have to learn how to do them

mating parents

- differential parental investment theory: time, energy and risk involved in producing and raising offspring
- polygyny: one male with multiple females, most mammalian species are polygyny because the female puts a lot of time and care into their pregnancies and childcare, she wants to maximize the genetic potential of her offspring
- polyandry: one female with multiple males
- monogamy: one male with one female
- polygynandry: multiple males with multiple females (communal parenting): a group will raise offspring
- human mating patterns: we are mostly monogamous, monogamy makes the best sense for human beings because our offspring require extended care

fallacy (somethings that are not true)

- social darwinism: "survival of the fittest" is a term coined by Herbert Spencer, individuals either adapt and survive or they die, used this argument to say that the government should not support the weak and poor (handicapped, mentally ill),
- naturalistic fallacy: G.E. Moore said that Spencer committed naturalistic fallacy, just because something is natural does not make it good or right
- deterministic fallacy: more and more people try explaining how we act, think and feel by genetics and by genes, if you do this you have committed deterministic fallacy

MIDTERM ONE

70 multiple choice, 4 short answers (three or four lines), 8-10 fill-in-the-blank questions

