



Behavioral genetics

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PLAN




What is this behavior?



Genetics



Behavioral genetics



Behavior (American English) or **behaviour** (Commonwealth English) is the range of actions and mannerisms made by individuals, organisms, systems, or artificial entities in conjunction with themselves or their environment, which includes the other systems or organisms around as well as the (inanimate) physical environment. It is the response of the system or organism to various stimuli or inputs, whether internal or external, conscious or subconscious, overt or covert, and voluntary or involuntary. Taking a behavior informatics perspective, a behavior consists of behavior actor, operation, interactions, and their properties. A behavior can be represented as a behavior vector.

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Genetics

Besides the functioning of the endocrine and nervous system, genetics is another biological factor that affects human behavior and thought

- Behavioral Genetics – Genetic and environmental contributions to personality and behavior
- Human traits are usually caused by genes acting together (not usually one gene)



Behavioural genetics, also referred to as **behaviour genetics**, is a field of scientific research that uses genetic methods to investigate the nature and origins of individual differences in behaviour. While the name "behavioural genetics" connotes a focus on genetic influences, the field broadly investigates genetic and environmental influences, using research designs that allow removal of the confounding of genes and environment.

Behavioural genetics was founded as a scientific discipline by Francis Galton in the late 19th century, only to be discredited through association with eugenics movements before and during World War II. In the latter half of the 20th century, the field saw renewed prominence with research on inheritance of behaviour and mental illness in humans (typically using twin and family studies), as well as research on genetically informative model organisms through selective breeding and crosses. In the late 20th and early 21st centuries, technological advances in molecular genetics made it possible to measure and modify the genome directly. This led to major advances in model organism research (e.g., knockout mice) and in human studies (e.g., genome-wide association studies), leading to new scientific discoveries.




Evolutionary Psychologists


- Study how natural selection favored behaviors that contributed to survival and spread of our ancestors genes
- Look at universal behaviors shared by all people

Behavioral Geneticists

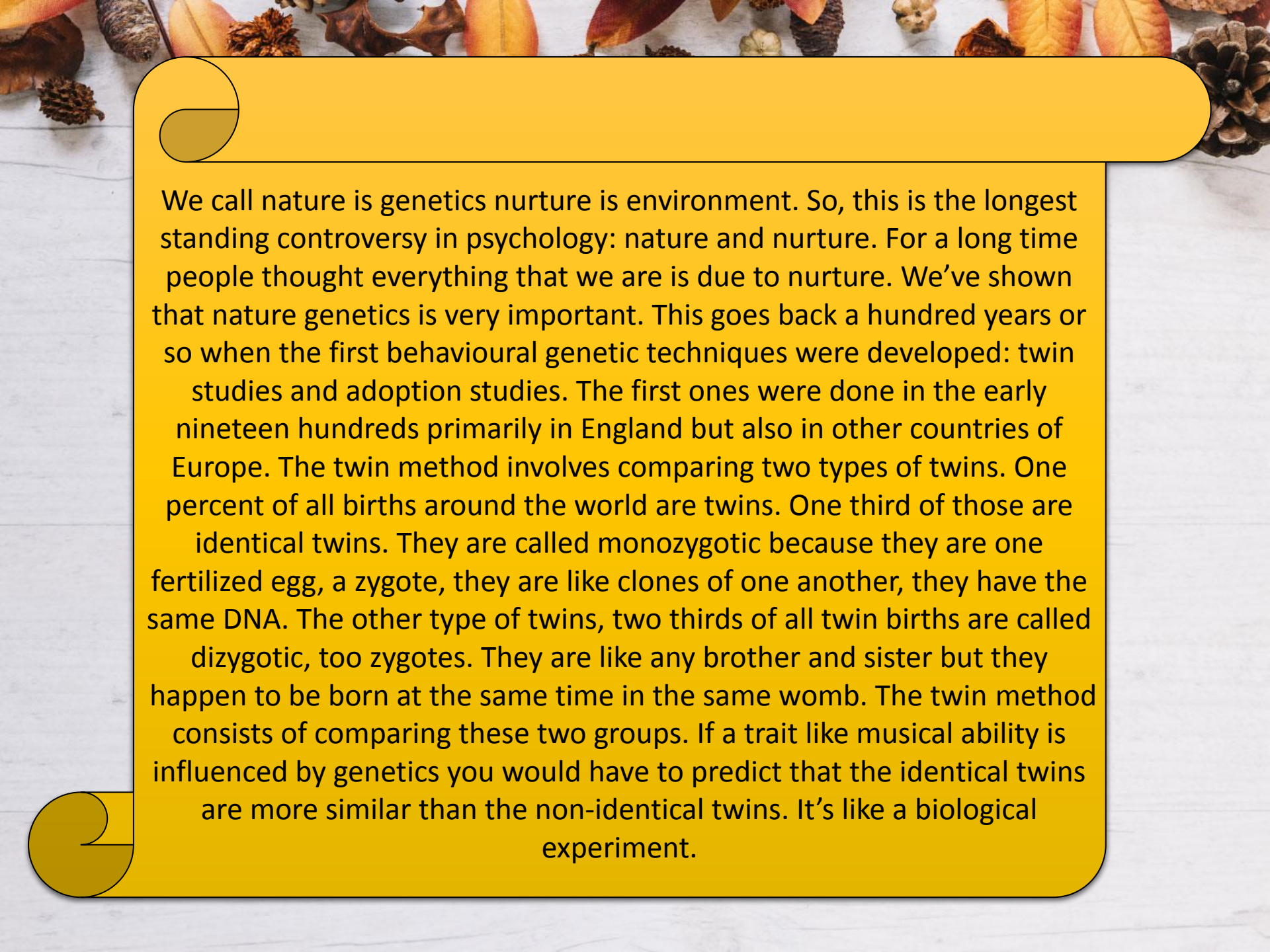
- Study the role played by our genes and our environment in personality characteristics and behavior (mental ability, emotional stability, temperament, personality, interests, etc.)
- Look at the cause of our individual differences
- Gene-environment Interaction – choose environ because of genes

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My interest is in behavioral genetics. It is looking for genetic influences on why people differ in behavior so some people become schizophrenic, some children have reading disability. So I'm interested in what causes those differences and for a century in psychology people assumed all that's important is the environment and especially the environment your parents provided in the first few years of life.

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That's from Freud onward. But what we've learnt using behavioural genetics is that DNA differences between people account for almost half of the differences between people. This is far bigger than all the other effects in psychology put together, so not only does genetics matter. It matters in a lot for almost all areas of psychology: mental health and illness, cognitive abilities, personality, school achievement.



We call nature is genetics nurture is environment. So, this is the longest standing controversy in psychology: nature and nurture. For a long time people thought everything that we are is due to nurture. We've shown that nature genetics is very important. This goes back a hundred years or so when the first behavioural genetic techniques were developed: twin studies and adoption studies. The first ones were done in the early nineteen hundreds primarily in England but also in other countries of Europe. The twin method involves comparing two types of twins. One percent of all births around the world are twins. One third of those are identical twins. They are called monozygotic because they are one fertilized egg, a zygote, they are like clones of one another, they have the same DNA. The other type of twins, two thirds of all twin births are called dizygotic, too zygotes. They are like any brother and sister but they happen to be born at the same time in the same womb. The twin method consists of comparing these two groups. If a trait like musical ability is influenced by genetics you would have to predict that the identical twins are more similar than the non-identical twins. It's like a biological experiment.