

Biological Influences

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WHAT'S COVERED

In this lesson, we'll discuss some of the biological influences and dimensions of developmental psychology, as well as the historical perspective and figures behind those aspects. You will also reflect on how those studying these areas rely on their problem solving skill. The specific areas of focus include:

📋 🛛 BEFORE YOU START

The next few tutorials will focus on the biological, environmental, and cognitive dimensions of developmental psychology. **Developmental psychology** is the study of how a person changes both psychologically and physically over the course of their life from birth to death.

This area of psychology studies the lifelong process of these changes, covering the whole spectrum of ages from infancy and prenatal to childhood, on to adolescence, then to early adulthood, and finally to old age.

Thus, the goal of developmental psychology is to identify those stages of psychological development, the trends that are occurring within those stages, and the underlying causes for those trends.

1. Heredity/Inheritance

In the context of psychology, biology is the internal physical and chemical processes that influence the human mind and behaviors.

The first important aspect of biology is **heredity**, which is the passing on of physical and psychological characteristics from parents to their offspring. This is also known as **Inheritance**.

Gregor Mendel is considered to be the father of genetics. Mendel was an Austrian scientist and a monk during the mid to late 1800s. While at his monastery in Austria, he examined the inheritance of certain characteristics of pea plants.

He saw how different characteristics could be passed from one parent plant to its offspring. There were seven particular traits that he studied, each of which only had two forms.

When breeding for certain types of characteristics in pea plants, Mendel noticed that some characteristics showed up more often than others.

→ EXAMPLE A pea plant would have a flower that was either purple or white, a stem that was either long or short, and seed shapes that were either round or slightly wrinkly.

As he started to record those characteristics, he noted two specific aspects:

- Genotype
- Phenotype

▶ ସେନ୍ଦ୍ରି Problem Solving: Skill Reflect

Recording observations is a key step in problem solving. When you write down what you see happening, you find trends and collect data that help you make better decisions.

The genotype is the genetic makeup, or the blueprint underlying these physical characteristics. The phenotype is the observable aspect of the characteristics.

ightarrow EXAMPLE A plant might have the phenotype for purple flower, a long stem, and a wrinkly seed. Then there's a genotype behind each of those characteristics that tells the plant to display those forms of heredity/inheritance.

TERM TO KNOW

Heredity (also referred to as Inheritance)

Genetic material for traits are transmitted from parents to their offspring; these biological influences represent the "nature" aspect of behaviors and cognition.

2. DNA

Although Mendel made these observations and discoveries, he wasn't actually recognized for those accomplishments during his lifetime.

It wasn't until the early 1900s when people realized how significantly important these things were, and actively started to study heredity in an attempt to identify how this information actually gets passed along from parents to offspring.

Finally, in 1953, John Watson and Francis Crick identified a structure of deoxyribonucleic acid, or**DNA**, which is the biologic basis for heredity and inheritance. It's the structure within the human body and biology that allows certain information to be passed from a parent to an offspring.

One of the important discoveries made about DNA was that its shape is a double helix. That shape allows it to function as the information center for the cells. In this way, DNA is like a zipper—you're able to pull it apart and have two halves, which can be copied and sent down to different cells and to the offspring.

TERM TO KNOW

DNA (Deoxyribonucleic Acid)

Genetic blueprint; genetic information is unique except for identical twins.

3. Effect of Genetics on Psychology

These biological aspects of heredity and DNA relate to psychology in that psychologists have to think of behavior and mental characteristics as a phenotype, just like the purple flowers and the wrinkled seeds in the pea plants. In other words, behavior and mental characteristics can be passed on in the same method from parent to offspring.

One way to determine how this works in psychology is through experiments, such as those done in twin studies. In twin studies, psychologists study twins that are either identical (sharing almost 100% of the same DNA) or fraternal twins (sharing closer to 50% of the same DNA).

The psychologists look at different mental characteristics to see if there's a genetic basis for the identical twins to have similar types of behaviors. In some aspects, psychologists have found this to be true.

ightarrow EXAMPLE Identical twins tend to have more similar IQs than fraternal twins. Additionally, if an identical twin has autism, the other twin is 60% more likely to also have autism than a fraternal twin would be.

Psychologists also look at identical twins that are separated at birth, as sometimes occurs. There isn't an experiment that they can do under these circumstances; rather, the psychologists simply try to observe any similar characteristics. In some cases, they've found that there are still similar characteristics despite the twins' separation.

While there's some doubt as to the validity of the results of these twin studies, there's also evidence in them of the importance that biology can have on developmental psychology. In this way, it's definitely an area of study that requires further research and understanding.

4. Biological Predisposition

Biological predisposition is a presumed hereditary readiness, or preparedness, for humans to learn certain skills, or to behave in a certain way.

ightarrow EXAMPLE When they're born, babies have certain behaviors that are programmed into them; they do these things innately, without any learning. If you brush babies' lips, then they'll start to suck. When you touch their hands or their feet, they start to grasp or move their fingers.

These behaviors are programmed into people to help them survive in certain ways. The sucking obviously helps the babies to get food if they want milk, and the grasping is supposedly a leftover behavior from when we were primates, and we had to grasp trees.

There are a lot of developmental theories that are also built on the idea of biological predisposition. Any theory that has developmental steps involved is essentially saying that humans have some biological basis for progressing that way.

TERM TO KNOW

Biological Predisposition

Readiness to learn new skills can be influenced by heredity.

In this lesson, you learned about two important aspects of biology: heredity/inheritance and DNA. You also learned that biological predisposition is a presumed hereditary preparedness to learn certain skills. You learned that those who study these areas use strong problem solving skills to observe things and make connections and decisions based on those observations. In other words, humans are pre-programmed with certain instincts and knowledge as a result of evolution!

Good luck!

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TERMS TO KNOW

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