**Nature vs. Nurture**

Each and every person on this planet is unique and different from the people that surround them in ways that the eyes can see physically and ways that are invisible to the eye. The DNA that courses throughout our bodies is the instruction manual that your body uses to create your unique features. The gene sequences each depict a trait that is either physically expressed (i.e. the color of your hair) or a trait that controls an internal function in your body (i.e. protein production). So, what is it that makes us all so unique compared to one another? The nature vs. nurture debate has been a long-argued debate that aims to pinpoint what exactly controls these variations in humans. On the nature side of the debate, it is argued that the genes in your body solely control your multiple traits, such as hair color. The nurture side of the debate argues that the environment in which one is raised has the greatest impact on the traits you obtain, such as skin color.

**Background**

 The DNA that courses through your body is the instruction manual to making you who you are. DNA is replicated and used to replace old cells and those cells are what make up the entire human body, and ensures that everything works properly. In 1873, Alphonse de Candolle’s *Histoire des Sciences et des Savants depuis Deux Siecles,* was focused on how multiple environmental influences effected the number of European countries that produced eminent scientists (6). To answer to this question, Candolle asserted that “environmental variables were effective, but only for innately predisposed individuals, and then went on to name and formulate the modern form of the “nature-nurture” controversy” (6). This debate started all the way back in the mid-late 1800s and has since grown and gained a wide variety of valuable information on both sides of the arguments. Therefore, there really is no clear answer as to which one contributes more to making us unique, our genes or our surroundings in life.

**Nature**

 Nature, also known as “biological determinism” (1), is really a simple argument. In this argument, the sole reason we are who we are, is said to be determined just by our genetics, this is sometimes referred to as “behavioral genetics” (1). This can be defined as “a field in which variation among individuals is separated into genetic versus environmental components” (2). Our genetics encode everything that makes us who we are, from the color of our hair to the way that we react to certain situations, but this does not explain everything that makes us totally unique from one another. It simply could not explain everything that makes us who we are due to how intricate human life is. But our genetics are responsible for the entirety of our body’s physical and non-physical characteristics. They are the handbook to who you are as a person, and incredibly important to making humans. On the molecular level, DNA makes up our genes and is the one thing that truly stores all of the information for the human body. Your DNA is replicated, translated, and transcribed and then distributed into the body to create the multiple proteins needed to function in the body. It creates new cells, and replaces the old ones. It is an incredible and powerful thing, and is a huge component of an individual. The nature argument is greatly based on this argument, and the science behind it backs up everything that it has proven, such as DNA being the major reason that we are who we are, but the science also shows that there is no way that only our DNA can be the sole reason we are unique, the environment does have something to do with it.

**Nurture**

 The environment that a person is raised in has a huge impact on who they are as an individual. For example, if someone lives in an area where the climate is warmer and the sun is always out, they are more than likely to have darker skin. But to go farther than the climate, if someone is raised in an abusive household, they are going to be shaped into someone who is likely violent at times and may even go to the same extreme that their abusive parent did. Environmental influences are split up into two categories, shared and non-shared (or unique) environment (2). These categories are both self-explanatory, shared environment is the environment that is shared amongst the people around them, such as brothers and sisters. Non-shared environment is the environment that is unique to an individual. According to Craig Venters, creator of the Human Genome Project, “The wonderful diversity of the human species is not hard-wired in our genetic code. Our environments are crucial” (1). Every one of us leads a very different life from the other and this makes us all unique, because of the impact our environments have on our individuality. But just as it is with the nature side of the argument, nurture could not be solely responsible for making us who we are. The environment is not the reason someone is as tall as they are or shaped the way they are. Therefore, the nature side of the argument complements the nurture side of the argument by giving a reasoning for the things the environment is not able to dictate.

**Connecting the arguments**

 Nature and nurture are responsible for making us all unique individuals. Without one or the other, we would all be incomplete as people and unable to properly function. Our nature makes up the internal and physical aspects of us which is the majority of who we are. However, nurture is what makes our personalities and our individuality, something much smaller but just as important to the human species. A study done on the origins of “individual differences in theory of mind (ToM), the Environmental Risk (E-Risk) Longitudinal Study sample 1,116 sixty-month-old twin pairs completed a comprehensive battery of ToM tasks. Individual differences in ToM were striking and strongly associated with verbal ability. Behavioral genetic models of the data showed that environmental factors explained the majority of the variance in ToM performance in this sample” (7). With this being said, it has also been discovered that “shared environmental influences on verbal ability had a common impact on ToM, and explained more than half of the phenotypic correlation between these two skills” (7). Therefore, it is clear that our environment is an extremely important factor in making us who we are.

 It is clear to see why there are strong arguments on both sides of this two century long debate. There is truly no way to say that one or the other is more responsible for making us who we are. The amount of studies that have been done and the amount of theories that are still being formulated is overwhelming and incredible. It is a great growing field and the future is exciting for the research to be done.

**Key terms**

DNA

* A self-replicating material present in nearly all living organisms as the main constituent of chromosomes. It is the carrier of genetic information (3).

Genetics

* The study of heredity and the variation of inherited characteristics (4).

Environmental Influences

* The aggregate of surrounding things, conditions, or influences (5).

Theory of Mind

* The ability to attribute mental states – beliefs, intents, desires, emotions, knowledge, etc.- to oneself, and to others, and to understand that others have beliefs, desires, intentions, and perspectives that are different from one’s own (8).

Phenotype

* The set of observable characteristics of an individual resulting from the interaction of its genotype with the environment (9).

Genotype

* The genetic constitution of an individual organism (10).

Biological Determinism

* Refers to the idea that all human behavior is innate, determined by genes, brain size, or other biological attributes. This theory stands in contrast to the notion that human behavior is determined by culture or other social forces (11).

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