

Twins: defining nature versus nurture

[Science](#), [Genetics](#)



Introduction

Twins leave many people pondering a variety of questions. The two different types of twins have various similarities and differences. Identical twins' similarities are be caused by a combination of genes and the environment. Researchers have been trying to distinguish the difference between the effects of nurture and nature for years now. Since then, many studies have been done to help address these debates. By understanding the medical definition of twins, various scientific twin theories, and the debates surrounding twins, scientists are finding that understanding twins is crucial to further understand how DNA and genes affect a person's behavior and appearance. Many people are intrigued with the topic of twins, but do not know much on the topic. Some twins look alike and some look nothing alike. Some twins are the same gender and some are different. Twins come in all different shapes, sizes, and genders.

Statistics

Many people walk by twins and do not even know it each day. There are two forms of twins, monozygotic twins, otherwise known as identical twins and dizygotic, also known as fraternal twins (" The Economist"). The amount of twin births has been increasing year by year. In the 1980s, 1 in 53 live births bore a set of twins, while in 2009, 1 in 30 births bore twins (" Multiple Births"). This is a 76 percent increase from 1980 to 2009 (" Multiple Births"). In almost every state, the rate of twin births has risen nearly 50 percent (" Multiple Births"). In the United States, over the last 30 years, the percent of twin births has risen almost 100 percent in older cases of pregnancy ("

Multiple Births”). In the last 30 years, women over 40’s birth of twins percent has risen by 200 percent. (“ Multiple Births”). In 2009, of all the states in the U. S., Mexico had the lowest rate of twins born, which was 22. 3 of 1, 000 births was a pair of twins. The highest rate of twin births is in Connecticut, which hold the record at 45. 9, in 2009 (“ Multiple Births”). This means that almost 5 percent of all the babies born in 2009, in Connecticut were twins (“ Multiple Births”). As of 2015, according to the National Center for Health Statistics, 133, 155 twins were born (“ Multiple Births”). As the past 30 years have gone by, twin births have risen nearly 76 percent. This is means that for every 1, 000 births, there are 33. 5 twins born (“ Multiple Births”). The rate of twins being born in the United States has increased significantly, especially over the past 30 years (“ Multiple Births”).

Identical Twins

Identical twins are the twins that are more commonly recognized, however they are less common between the two. Identical twins are always that same gender. In other words, they cannot be male-female. The birth of twins happens as frequently as 1 in every 250 babies born. (“ The Economist”). “ Identical twins happen when two embryos develop from one egg” (“ The Economist”). This is where identical twins get their scientific name “ monozygotic” because the term monozygotic means “ from one egg”. The egg usually splits within the first 12 days of the pregnancy. This means that monozygotic twins have the exact same genetic code (“ The Economist”). Identical twins are often referred to as duplicates of each other (Townsend 43). However, it is known that there are usually differences between identical twins. Some may be small, but they are definitely there.

Fraternal Twins

Fraternal twins differ from identical twins. Fraternal twins form just like singletons form. Singletons, are a way of referring to normal siblings. However instead of one egg being fertilized, two eggs are (Newman 3). In fact, whether a not a mother is having fraternal twins can be genetic. If a mother has fraternal twins in her family genes, there is a greater chance of her having fraternal twins. Typical brothers and sisters share around half of their genes. This also applies to dizygotic twins (“ The Economist”). Dizygotic twins can be different genders, or the same gender. Both are common for fraternal twins. Some fraternal twins look relatively similar. However, some look nothing like each other (“ A Thing or Two About Twins”). Fraternal twins are also less common than identical twins (Heuser). In 1964, the rate of fraternal twins was significantly higher than the rate of identical twins (Heuser).

Similarities between Identical Twins

Since identical twins share all of the same genetic code, it is predicted that they will have many similarities to each other (“ The Economist”). The most common known similarity between Identical twins is their appearances (“ A Thing or Two About Twins”). However, identical twins also the same color eyes, are usually around the same height, have the same hair color, and the same fingerprint. “ Even though Monozygotic twins look relatively alike to the naked eye, a online imaging system is able to recognize small variations in body markings, the arch of an eyebrow, or differences in skin pores” (“ A Thing or Two About Twins”). This means that although differences in appearance are not always noticeable, the differences are still there, and can

be noticed by new technology created for this process. (“ A Thing or Two About Twins”). Identical twins also have the same mortality and morbidity rates (“ Mortality and Morbidity”). “ Twins are at greater risk of perinatal death and serious morbidity than singletons and within twins, monozygotic are at greater risk than Dizygotic twins” (“ Mortality and Morbidity”). This means that all twins have a greater risk of dying when they are born. However, out of both types of twins, Identical twins are at a greater risk of death. Since Fraternal Twins come from two separate eggs, they have no more similarities than regular siblings (“ Peeking at Twins”). This means, they may or may not look like each other. Regular siblings have some of the same genes, but not all. This also applies for fraternal twins (“ Peeking at Twins”).

Identical Twins often get questioned on their connection to one another. People wonder if twins have the same dreams, can read each other’s minds, or can even feel each other’s pain. Although no real psychic powers have ever been proven between identical twins, there are still many intriguing connections between twins (“ A Thing or Two About Twins”). There are many stories of Identical Twins who are separated at birth, but marry similar people or even have the same careers. Correlation in twins’ occupations may be because of chance, DNA similarity, related relative’s effect, or it may be a mix of several of the indicated components (Twin Studies 43).

Studying Twins

There have been many studies done on twins to see if a connection between them can be proven. Tests help researchers interested on the topic of twins gather information about each twin's reaction to different situations.

One test given to twins to see how each twin reacted to the problems. Some twins had grown up apart and some had grown up with each other. Dan Maloney, a researcher on the test, says, " The strategies were so different between twin pairs, but within identical pair they were so similar. Both twins vocalized or turned around or stared at the screen or solved the problems quickly" about a set of problems given to each individual twin (Born Together 1541). This means that each pair of twins tested had very different ways of going about the problems given to them. However, both twin within the set had very similar ways of handling the situation. The twins all had very similar reactions to the problems. When they were frustrated, both twins responded the same way. The twins both asked similar questions about the problems, and acted similarly while solving the problems. Both twins also completed each problem at the same pace as one another. It is thought that genetics play a role in how each twin reacts to each situation, considering the fact that some twins had grown up in different locations, different families, and learning different things. The environment that the twins had grown up in were not the same, but their genetics are, which helps researchers conclude that genetics do in fact, play a role in twin's reactions to situations and problems (Born Together 1541).

Many researchers think of twins as vital components to understanding DNA and the mystery between nurture versus nature (“A Thing or Two About Twins”). There are many debates surrounding genes and environment. Identical twins make perfect subjects on which impacts behavior more. Researchers want to figure out what affects people the most: their genes, or their environment. Many personal characteristics and actions derive from genetic and environmental elements (Twin Studies 46). Since identical twins have all the same genes, they make the perfect test subjects. Researchers find twins who have been separated at birth and use them to learn and study about nature (genes) versus nurture (environment). The debate on nurture versus nature has become a very popular topic within the past couple years. Not only are researchers interested in it, but people all over the world are interested in this intriguing question on the effects of nature and nurture. Researchers begin with studying genes and what genes do. Genes are DNA that each child obtains from his or her parents. Genes usually affect some attributes a person has.” Genes affect height, weight, manic-depressive psychosis, alcoholism, cognitive development, reading skill, rate of accident occurrence in childhood, television viewing habits...” (Twin Studies 43). This means that since, genes have such a large effect on people’s personalities, even if Identical Twins had grown up apart from each other all their lives, they are still impeccably alike. Results on a study of twins who had been separated at birth and lived without knowing each other their whole lives, showed the two to be uncommonly alike. This supports maybe researcher’s hypothesis’ stating that genes do in fact have a very big impact on people’s decisions (“Twins Reshaping the Nature Versus Nurture Debate”). When a

child has a gene that has been obtained by a parent, that child now has a possibility for that particular attribute.

There has also been a recently new discovery relating to human's genes called " Epigenetics". Epigenetics can in fact, be rearranged and slightly changed. Epigenetics make a complex arrangement that can turn each person's genes on and off. This can affect people's characteristics, attributes, and personalities (" Twins Reshaping the Nature Versus Nurture Debate"). The epigenetic system changes as the individual's age increases (" Twins Reshaping the Nature Versus Nurture Debate"). Researcher, Danielle Reed describes Epigenetics as written in pencil (" A Thing or Two About Twins"). Reed states, ' What I like to say is that Mother Nature writes some things in pencil and some things in pen,' she says. ' Things written in pen you can't change. That's DNA. But things written in pencil you can. That's epigenetics. (" A Thing or Two About Twins"). The DNA within the epigenetic system remains the same, but the system that contains and keeps control of the DNA varies (" Twins Reshaping the Nature Versus Nurture Debate").

The other side of the nature versus nurture debate involves the environment each individual grows up in. Since identical twins share the same DNA, it is suspected that any and all differences between the two are because of the environment he or she has been exposed to in their life (" A Thing or Two About Twins"). The setting a person grows up in affects factors in one's life that genes cannot affect (" Twins Reshaping the Nature Versus Nurture Debate"). The effects of environment on a twin begin in the womb. It starts with something as little as which twin receives more nutrients. (" Twins

Reshaping the Nature Versus Nurture Debate”). An example of a characteristic of a person from the environment, is their skin. Skin texture and color can differ because of different amounts of exposure to the sun (“ A Thing or Two About Twins”). Genetic codes that are similar to each other can be conveyed at different amounts of emphasis, depending in the environment the genes have been exposed to (Twin Studies 46).

Conclusion

People and doctors everywhere are captivated with the idea of clones, which is technically what identical twins are (Twins Studies 43). Both types of twins, identical and fraternal have similarities. However, identical twin have about as many similarities as any other siblings would have, while identical twins have all the genes (“ Peeking at Twins”). Identical twins’ similarities have no limit. The twins can look, speak, and act similarly (“ A Thing or Two About Twins”). Many studies have been done to prove whether, nurture or nature affects shaping the twin into who he or she is today. Although researchers have found many new discoveries with these studies, it is still unknown whether nature or nurture affects twins more (“ Twins Reshaping the Nature Versus Nurture Debate”). Twins provide information that is vital for researchers studying genetics and heredity because they provide genes that are nearly identical.

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