

Fascinating World of Science

(Author name withheld by request)

Twins: Not Completely Different nor the Exact Same

“Wow! You are a twin?! Are you and your sister identical or fraternal?!”

This is the common question that people ask upon discovering that I have a “clone” – or a twin, that is. Although my sister Laura and I each have our own identities, there are many physical similarities between the both of us, such as natural hair color, hand gestures, tone of voice, height (she is only about ½ inch taller than me, if that), eye color, and overall physique. In terms of voice tone, it was quite entertaining when even our parents could not distinguish our voices over the phone. Of course, that form of entertainment mainly existed during the landline era.

Although I do not consider myself that interesting of a person, the word “twin” seems to fascinate others, making their faces light up in a weird way, especially if they had no clue that I am a twin. It’s almost as if I need to introduce myself and say, “Hi, my name is Mary and I have a clone”.

So, back to the typical question of Laura and I being fraternal or identical. This really depends on which one of us you ask. My sister enjoys giving the shortcut response of “fraternal”. However, I am not always a fan of responding with half-truths, so about 99.98% of the time, I respond with, “so, have you heard of polar twins”? Then I pause for a few seconds and wait for their response, at the same time knowing they absolutely have *no* clue what polar twins are. During that swift pause, a look of

concern actually appears on their face. It seems that anything associated with the word “polar” possibly indicates a mental condition, rather than simply a twin type. After that awkward pause, I get on full twin educational mode and briefly explain that both of us likely fall into what is known as polar twinning (or half-identical) and that we are neither fraternal or identical.

Types of Twins

A common misconception is that only two twin types exist, which are fraternal and identical. While it is accurate that fraternal and identical are the most common types of twins, others exist as well. However, these other types have not been “proven”. What does this exactly mean? Other types of twins are mainly based on theory, not actually confirmed.

These types of twins include:

- Identical
- Fraternal
- Polar body (or half-identical)
- Mirror image

In addition, this article will distinguish the above mentioned four twin types based on: (1) features/appearance, (2) percentage of DNA shared, (3) genetic roles, and (4) gender roles.

*For every 100 people you encounter,
only 3 will be a twin* -verywell family

Identical Twins (or Monozygotic)

Features. Although the appearance of both twins makes it obvious that they are identical (or not), determining the twin type (i.e., fraternal or identical) is based on how they were formed. For example, identical twins are formed by a single fertilized egg (or zygote) which splits into two individual embryos. What classifies these twins as being identical are that the two embryos resulted from a single egg/sperm combination versus from multiple eggs.

Gender role. Identical twins are always the same gender. For example, there can only be two identical twins that are boys or two identical twins that are girls (i.e., no boy/girl combination).

Genetic role. Genetics does not play a part in having identical twins. Rather, it seems to happen by chance – or randomly. It can be due to a variety of external environmental factors, but the exact reasons as to *why* identical twins form remain unexplained.

Percentage of DNA shared. Identical twins result from a *single* fertilized egg which splits, developing into two babies. Therefore, they both share the same genetic origin and 100% of their DNA.



Photo of identical twins. Retrieved from <https://www.livescience.com/identical-twins-dont-share-all-dna.html>

Identical twins are not hereditary! They seem to happen by chance – or randomly. Reasons for this remain unexplained. –verywell family

The odds of having identical twins are about 3 in 1,000 (less than fraternal twins). –verywell family

Fraternal Twins (or Dizygotic)

Features. What differentiates fraternal from identical twins is that they result from *two* fertilized eggs. Although the two eggs are released at the same time, each egg is fertilized by a different sperm. This is why fraternal twins appear more different than identical twins.

Gender role. Fraternal twins can be of same and different genders since they come from different eggs and sperm. For example, fraternal twins may consist of the following: (1) boy/boy, (2) girl/girl, and (3) girl/boy combination.

Genetic role. Unlike identical twins, genetics may play a role for fraternal twins. Therefore, if fraternal twins run on either the mother's or father's side of the family, the odds for having twins are higher.

Percentage of DNA shared. Identical twins have 50% of their genes in common, which also occurs with any other sibling. This is why fraternal twins appear similar, but not identical and why they can be of different genders.

Fraternal twins are twice as common as identical twins, making up about 2/3 of all twins



Photo of fraternal twins (boy and girl). Retrieved from <https://www.medicaldaily.com/genetics-giving-birth-fraternal-twins-383995>



Photo of fraternal twin boys (same gender). Retrieved from https://stock.adobe.com/search?k=%22fraternal+twins%22&asset_id=267811677

Polar Body Twins (or Half-identical)

Now...this is where things get both strange and fascinating....

Although polar body twinning is somewhat of an unknown phenomenon, theories remain of its existence. Though not confirmed (or proven), doctors have told our

parents that my sister and I likely fall under this twin type.

In polar twins, there is *one* egg cell which splits into unequal parts. Each part is subsequently fertilized by two separate sperm. The polar body is the *smaller* of the two halves and typically does not survive due to its size. However, if a polar body survives, it could be fertilized by one sperm when the larger half of the egg is fertilized by another. The result would be polar twins.

Features. Since my sister and I are very genetically similar, we tend to look very much alike, but not identical. These similarities include:

- Having the same eye color.
- Having the same natural hair color (minus the highlights!)
- Having the same weight at birth and as adults. (I was born at exactly 6 pounds, and my sister who arrived 8 minutes later, was born at 6 pounds and 4 ounces).
- Being the same height – only she is about only ½ inch taller than me.
- Having the same physique.
- Having the same facial birthmark.

Some differences in our features include:

- Having different dental structures. For example, prior to getting cosmetic work done, my sister had a gap on the left side of her front teeth (resulting from an underdeveloped tooth). My bottom front teeth have always been “crowded in,” whereas hers are not.

- Having a small red circular mark on my right hand. My sister does not have that same red mark.
- Having different face shapes. For example, my face shape is a little wider and longer than my sister's.



Photo of Laura (left) and I (right) as children. Thinking this was Christmas of 1983.



Photo of me (left) and my sister (right) as adults. Circa 2018.

Gender role. Based on what I have researched, there have been no cases on boy/girl mix polar twins. Although rare, it *may* be a possibility since polar twins do not share 100% of their DNA. Polar twins typically consist of the same gender.

Genetic role. Polar twins have the *same* set of genes from their mother. However, there is more variation in the genes from their father. Therefore, polar twins share less of their genetic markers than identical twins, but more than fraternal twins – about 75% of shared genes.

For additional information on the science of polar twins, go to:
[What Are Polar Body Twins? \(verywellfamily.com\)](http://verywellfamily.com)

This article link discusses the process of cell division, which is known as meiosis.



My sister Laura (left) and I (right) on our 1st birthday. Circa 1978.

Mirror Image Twins

Mirror image twins are classified as a subtype of identical twins and literally reflections of each other (i.e., mainly in terms of defining characteristics such as birthmarks and dominant left/right side). What may explain how mirror image twins

are formed is that the fertilized egg tends to split approximately 7-10 days after fertilization, versus *within* the first week. Therefore, the embryo develops a left and right side. However, mirror image twins typically have identical skin, eye, and hair colors. Their size and weight are similar as well.

Depending on when the split occurred during fertilization may determine how similar or different mirror image twins turn out to be. - healthline [Parenthood](#)

Although it has been stated that Laura and I likely fall under the polar twin category, I have noticed that some characteristics of being mirror image exist too. Below are some examples of what these twins may experience:

Matching gesture reflections. Each twin has either a right or left dominant side. For example, my sister primarily uses her right side for all activities. However, the left side is my dominant side. So, although my sister writes left-handed, her right side is her dominant side.

Defining characteristics. I developed a small “birth” mark on the left side of my face at the age of 30. I suspect it was a mark developed at birth, but did not show up until decades later. What I find bizarre is that my sister developed the same “birth” mark around that time, only it was on her right side.

Other mirror image tendencies. Another tendency is my sister and I are both runners and experience ongoing issues with our

sciatic nerve. Sciatica nerve pain travels into the left or right leg area, which is typically the weaker side. Her nerve pain is on her left leg, whereas mine is on the right. Notice that I mentioned earlier that her right side is dominant and mine is the left side.

But...How Do We Really Know?

Although doctors and my parents have told us that we likely fall under the polar twin category, I am not 100% convinced that we do. If Laura and I are actually polar twins, then why do we seem to have certain characteristics which are reflective of each other? Could it be that we are actually identical twins, but fall under the subtype as being mirror image? Or...could twins be half-identical and also mirror image?

The fact that research is still underway regarding *how* certain twins are formed is a fascination of science in itself!! As with many other beings, I look forward to seeing what other discoveries may be made concerning twins.



Another photo of me (left) and my sister (right) as younger adults. Circa 2000.

Sources

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