



IN YOUR HANDS

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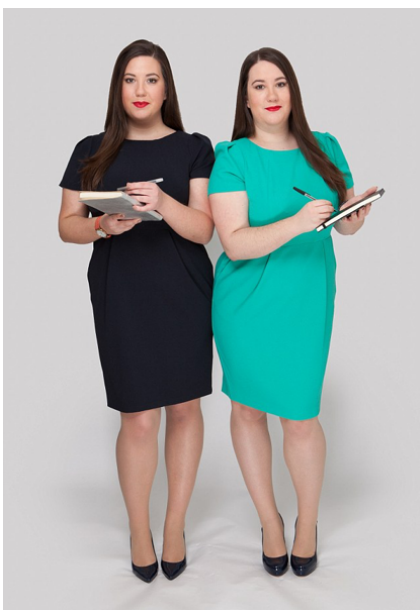
BIOGRAPHY

RESEARCH

Identical twins: One right, one left

October 21, 2016 by [cvp4](#) — [Leave a Comment](#)

I often get inspiration for my blog from posts on Facebook pages devoted to news and questions about left-handedness. Recently, someone asked how it was possible for identical twins to have different handedness...one twin being right-handed while their co-twin is left-handed. This does seem strange given that identical twins stem from a single ovum that splits in the days after fertilization takes place. Identical twins come from a single ovum and are assumed to be 100% genetically identical. If handedness has a strong genetic origin, then identical twins should always show the same handedness side.



Mirror image twins, one right-

There is a subset of identical twins called *mirror image twins*.

Mirror imaging in twins occurs when the fertilized ovum

separates later than usual...sometime between 7 and 12

days after fertilization. Mirror image twins show opposite side

handedness like the twin pair in the photo. They may have

hair whorls that wind in opposite directions and moles or

other skin markings that are identical but on opposite sides

of the face or body. In a few cases of mirror imaging, one

twin may display *situs inversus* where the position of internal

organs is on the side opposite to their usual placement...the

heart is on the right rather than the left side, for example.

About 25% of identical twins are mirror image twins.

handed, one left-handed

In the past, researchers questioned using twin samples in studies exploring the genetics of handedness because of the mirror imaging possibility. However, the timing of the ovum split after fertilization can be measured by whether or not the twins share fetal membranes in the womb. If the separation occurs soon after fertilization, each twin develops its own fetal membranes. If **the division occurs beyond 7 days post-fertilization, the twins share the fetal membranes**. **No handedness differences among twins of different membrane types have been found**; these results open the door for studying the genetics of handedness using twin samples.

Research with twins typically compares handedness similarities among identical twins to those found among fraternal twins. Fraternal twins are produced by the fertilization of two separate ova and, therefore, like brothers and sisters, they share only 50% genetic identity. If there is a strong genetic component to handedness development, identical twins should show higher rates of similar handedness than fraternal twins. Interestingly, this is not the case. Eighty percent of both identical and fraternal twins show handedness concordance. Both twins in the pair show same-sided handedness, either both right- or both left-handed. Recent studies use statistical modeling procedures to estimate the contributions of genetic and non-genetic factors in the development of handedness in twins. **These studies indicate that genetic factors play only a minor role in the development of handedness side in twins**. Most of the variation in twin handedness is attributed to environmental factors such as differences in socialization, nutrition and other life experiences.

Filed Under: [Twins and handedness](#)

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